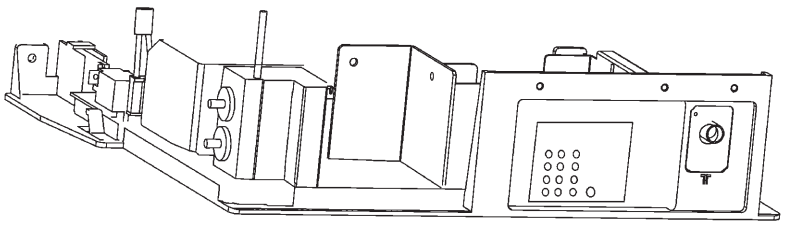
APEX

COLOR TELEVISION
SERVICE MANUAL

MODEL NO.: PF2025
CHASSIS NO.: CH-10C3(S)



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SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION"AND "PRODUCT SAFETY NOTICE"INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. The EHT must be checked every time the TV is serviced to ensure that the CRT does not emit X-ray radiation as result of excessive EHT voltage. The nominal EHT for this TV is 26.5±1KV at zero beam current (minimum brightness) operating at AC 120V. The maximum EHT voltage permissible in any operating circumstances must not exceed 29KV. When checking the EHT, use the High Voltage Check procedure in this manual using an accurate EHT voltmeter.
2. The only source of X-RAY in this TV is the CRT. To prevent X-ray radiation, the replacement CRT must be identical to the original fitted as specified in the parts list.
3. Some components used in this TV have safety related characteristics preventing the CRT from emitting X-ray radiation. For continued safety, replacement component should be made after referring the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

1. The TV has a nominal working EHT voltage of 25.5KV. Extreme caution should be exercised when working on the TV with the back removed.

1) Do not attempt to service this TV if you are not conversant with the precautions and procedures for working on high voltage equipment.

2) When handling or working on the CRT, always discharge the anode to the TV chassis before removing the anode cap in case of electric shock.

3) The CRT, if broken, will violently expel glass fragments. Use shatterproof goggles and take extreme care while handling.

4) Do not hold the CRT by the neck as this is a very dangerous practice.

2. It is essential that to maintain the safety of the customer all power cord forms be replaced exactly as supplied from factory.
3. Voltage exists between the hot and cold ground when the TV is in operation. Install a suitable isolating transformer of beyond rated overall power when servicing or connecting any test equipment for the sake of safety.
4. Replace blown fuses within the TV with the fuse specified in the parts list.
5. When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components identified by the international hazard symbols in the circuit diagram and parts list, it must be the company-approved type and must be mounted as the original.
6. Keep wires away from high temperature components.

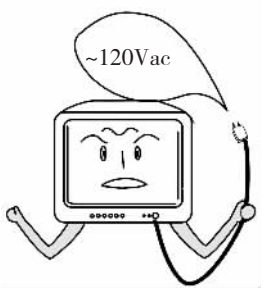
SAFETY INSTRUCTIONS (continued)

PRODUCT SAFETY NOTICE

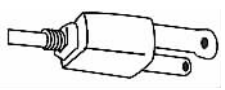
Many electrical and mechanical components in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-ray radiation protection afforded by them cannot necessarily be obtained by using replacements rated at higher voltages or wattage, etc. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols in the circuit diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X-ray radiation.

PRECAUTIONS

Power Sources-The TV set should be operated only from the type of power source indicated on the TV set or as indicated in the Service Manual. If you are not sure of the type of power supply in your home, consult your sales person or your local power company. For TV sets designed to operate from battery power, or other sources, refer to the operating instructions.

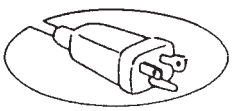


Grounding or Polarization-Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

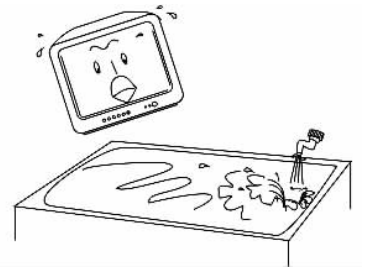


Wide blade
Lame large
Cuchilla ancha

Alternate Warnings-A three wire grounding type plug-a plug having a third (grounding) pin. This plug will only fit into grounding type power outlet.



Water and Moisture Warnings-Do not use the TV set near water-for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like. The TV set shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the TV set.



Ventilation-Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the TV set and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the TV set on a bed, sofa, rug, or other similar surface. This TV set should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

SPECIFICATIONS

Television system:	NTSC–M
Channel coverage:	VHF 2~13
	UHF 14~69
	CABLE TV: MID BAND (A–8~A–1, A~I)
	SUPER BAND (J~W)
	HYPER BAND (AA~ZZ, AAA, BBB)
	ULTRA BAND (65~94, 100~125)
Channels preset:	181
Antenna input:	75Ω (unbalanced)
Picture tube:	Effective screen dimensions: 406×305mm (15.98×12.01 in.)
Max. audio output:	3W+3W
Power source:	~120Vac 60Hz
Weight:	25.5kg (56 lbs.) (Approx.)
Dimensions (W/H/D):	585×460×458mm (23.03×18.11×18.03 in.) (Approx.)
Packing dimensions (W/H/D):	667×555×550mm (26.26×21.85×21.65 in.) (Approx.)
Rated power consumption:	110W

Designs and specifications are subject to change without notice.

KEY ICS AND ASSEMBLIES

Table 1 Key ICs and Assemblies

Serial No.	Position No.	Type	Function Description
1	N301	OM8839PS	Small signal processor
2	N401	TDA8350-N6	Vertical output circuit
3	N601	TDA7057AQ	Sound power amplifier
4	ND01	HEF4053BP	Analog switch circuit
5	N001	LC86F3248AU-DIP	Microcontroller
6	N002	AT24C08-10P	EEPROM
7	NY01	TDA6107Q	Video amplifier
8	NK02	TC90A13N	Digital comb filter
9	NK03	MM1031X5	Luminance signal amplifier
10	N606M	MSP3440	Audio demodulating and NICAM decoding circuit
11	NQ102	TDA9808T	IF signal processor
12	DS01	TA1219N	TV/Video switch circuit
13	DS02	TA78L009AP	Tri-terminal regulator
14	N103	TA78L009AP	Tri-terminal regulator
15	N402	LM317T	Tri-terminal regulator
16	A101	TDQ-6F2-M	Tuner

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS

CH-10C3(S) chassis mainly consists of an OM8839PS small signal processor together with a TC90A13N comb filter, MSP3440 audio demodulating and processing circuit, TDA8350Q-N6 vertical output circuit, TDA7057AQ audio power amplifier, TA1219N TV/Video switch circuit, TDA9808T IF signal processor and TDA6107Q video amplifier. The following give descriptions of signal flow process for the chassis on basis of PF2025's tuner, video signal processor, audio signal processor and scan signal processor. Refer to Fig.1 about signal process of PF2025.

1. Tuner

The high frequency circuit comprises an A101 tuner. The RF TV signal received by the antenna is tuned, high-frequency amplified and converted in A101 tuner to develop IF TV signals which are output in two ways after separated by the separated audio/video separator: One set is sent to the audio signal processor and another set to the video signal processor.

2. Audio Signal Processor

The audio signal processor contains a V101 pre-IF amplifier, audio/video separator formed of Z102, Z103, TDA9808T IF processor, part of TDA8844 (including an audio IF amplitude-limit amplifier, PLL discriminator, audio amplifier, volume control and audio switch), MSP3440 audio demodulating and processing circuit, TDA7057AQ audio power amplifier and speaker.

1) Sound IF circuit

One set of IF TV signal output from A101 tuner is output in two ways after amplified by V101: The first set is separated out sound IF signals to Pin19 and Pin20 of TDA9808T respectively by Z103 surface acoustic wave filter; the second set is separated out picture IF signals to Pin1 and Pin2 of TDA9808T respectively by Z102 SAW filter.

The picture IF signals are sent into the PLL voltage-control oscillator in the sync IC to develop a stable 45.75MHz signal for use of 4.5MHz second SIF signal. Externally connect Pin14 and Pin15 of TDA9808T to L110 tuning component of the voltage-control oscillator, Pin4 to PLL's low pass filtering circuit incorporating RP16 and CP14, Pin17 to the PIF AGC's filtering circuit incorporating CP05 and RP19, and Pin3 to RP13 and RP14 start-control adjustment resistors of RFAGC.

The sound IF signal input to Pin19 and Pin20 of TDA9808T is multi-sound IF amplified and double mixed to develop a second sound IF signal, which is then output from TDA9808T's Pin10. Externally connect Pin5 to CP03 filtering capacitor of the SIF AGC.

The second SIF signal from TDA9808T's Pin10 is sent to MSP3440's Pin17 after low-pass filtered by LP02, CP07, CP08 and amplified by VP03 and VP04. In MSP3440, the analog audio signal is converted into a digital audio signal through AGC control and A/D conversion, which later is processed into a digital stereo audio signal or digital dual sound signal to the related switch circuit after through FM demodulation and NICAM decoding. AV audio signals switched over and output from the AV PCB are input to Pin41 and Pin42 of MSP3440, which are also sent into the related switch circuit after through D/A conversion and proper amplification. The two audio signals are output in several ways after switchover in the switch circuit, of which one set is processed into analog audio signals and output from Pin24 and Pin25 to the audio power amplifier after through matrix processing, tone/loudness equalization/balance/volume controls and D/A conversion; another set is processed into analog audio

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

signals to be output from Pin30 and Pin31 to the AV PCB after through matrix processing, volume control, D/A conversion and switchover of the audio output switch and then output from the corresponding terminal after buffered by VS01 and VS02.

2) Audio switchover circuit

Part circuits of TA1219AN on the AV PCB perform audio switchover. From the circuit diagram, we can see that audio L1/R1 signals from the AV1 terminals are sent into Pin9 and Pin11 of TA1219AN respectively, audio L2/R2 signals from the AV2 terminals into Pin6 and Pin7 of TA1219AN respectively, and audio L3/R3 signals from the AV3 (or DVD) terminals into Pin13 and Pin15 of TA1219AN respectively, all of which are output from Pin33 and Pin34 to Pin41 and Pin42 of MSP3440 after switched over by TA1219AN. After digital processed in MSP3440, the signals are switched over with the TV digital audio signal, which are finally output from Pin24, Pin25, Pin30 and Pin31 of MSP3440 respectively.

3) Audio power amplifier

The audio power amplifier comprises a TDA7057AQ (N601). Two sets of audio signals from MSP3440′s Pin24 and Pin25 are input to N601′s Pin3 and Pin5 respectively, which are then output from Pin8, Pin10, Pin11 and Pin13 respectively to drive the speakers to output sound after though BTL power amplifying.

N601′s Pin1 and Pin7, volume-control pins, function as mute control pins for the chassis. When Pin37 of N001 microcontroller outputs high level, V631A saturates and conducts and N601′s Pin1 and Pin7 output low level to mute sound. The power-off mute circuit is formed of V632A, VD631A, C631A, R628A and R629A.

3. Video Signal Processor

1) Picture IF circuit

The video signal processor consists of a V104 pre-IF amplifier, Z101 picture IF SAW filter, OM8839PS small signal processor, TDA6107Q video amplifier and CRT.

Another set of IF signal output from A101 tuner is coupled to base of V104 by R139 and C101 to compensate insertion loss of Z101 SAW filter after amplified by V104. Then the signal is IF filtered out a picture IF signal to OM8839PS′s Pin48 and Pin49 by Z101. R102, R103 and R104 are bias resistors of DC operating point; C102 and R118 are negative feedback branch circuits to suppress self-excitation. L102 and resonator of the distributed capacitor are located near PIF to improve gain of PIF signal. R117 is a damping resistor to stretch frequency band of the amplifier. C105 is an AC bypass capacitor, and R101 and C106 are formed into a decoupling filter circuit.

The IF signals input from Pin48 and Pin49 of OM8839PS is filtered out a video signal as well as a second SIF signal after through fully IF amplifying and PLL sync detecting, which then are output from Pin6 after through video amplifying and video muting.

In OM8839PS, the detected video signals are output in two ways: One set is sent to the AGC circuit to develop DC control voltage differing depending on different levels of the antenna input signal and change automatically gain of the high-frequency amplifier and IF amplifier so that amplitudes of signals output from the end IF amplifier and video detector remain unchanged, ensuring the TV normal

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

operation and sharp and stable pictures. Externally connect OM8839PS's Pin53 to C234 AGC filtering capacitor of the IF amplifier. Pin54 is a RFAGC output terminal. AGCs of the IF amplifier and HF amplifier are set by the CPU through the I^2C bus. The RFAGC voltage is sent to the AGC control terminal of A101 tuner to control auto gain after filtered by C235, R108, R100 and C104. R107 and R131 are bias resistors of A101 AGC control terminal to supply DC operating points for the HF amplifying triode in A101.

2) Second Audio Trap

The detecting signal output from OM8839PS' Pin6 is separated out a video signal by the second SIF trap formed of Z601 and L617 after buffered by V609 emitter follower. Then the video signal is sent into Pin13 of OM8839PS for video signal processing after buffered by V204, voltage-divided by R206 and R204 and coupled by C208.

3) TV/Video switch circuit

The TV/Video switch circuit includes part circuits of TA1219AN (NS01), CVBS switch in OM8839PS and HEF4053BP (ND01).

From the circuit diagram, it's seen that the composite video signals (CVBS) from the rear AV1 and AV2 terminals are input into Pin10 and Pin8 of TA1219AN respectively, luminance signal and chroma signal from the S-Video on AV3 terminals into Pin14 and Pin16 respectively, and YUV COMPONENT signals into Pin3, Pin13 and Pin1 of HEF4053 BP(ND01).

After switched over by TA1219AN, the composite video signals (CVBS) from the AV1 and AV2 terminals are output from Pin34 of TA1219AN to Pin17 of OM8839PS, then output from Pin38 to TC90A13N comb filter for Y/C separating out Y luminance signal and C chroma signal to TA1219AN's Pin26 and Pin28 after switched over with the TV composite video signal input to Pin13 in the internal switch circuit of OM8839PS. After switched over with Y/C signals input to the S-Video on AV3 terminals, the separated signals are output from Pin30 and Pin32 of TA1219AN to Pin10 and Pin11 of OM8839PS, which then are switched over with Y/C signals from the color trap and color band pass filter in Switch 3 and Switch 4 of the internal switch circuit and sent to the luminance/chroma channels respectively.

From HEF4053BP (ND01) video switch circuit, it's seen that the generated Y, B-Y and R-Y signals after processed by the luminance/chroma channels of OM8839PS are output from Pin28, Pin29 and Pin30 to Pin5, Pin2 and Pin12 of HEF4053BP. The DVD-Y, DVD-U and DVD-V signals are input to Pin3, Pin1 and P13 of HEF4053BP from the DVD terminals. With high level output from Pin42 of N001 microcontroller, HEF4053BP's Pin9, Pin10 and Pin11 also output high level while HEF4053BP's Pin4 is connected with Pin3, Pin15 with Pin1 and Pin14 with Pin13. At this time, select DVD YUV signals. With low level output from Pin42 of N001 microcontroller, HEF4053BP's Pin9, Pin10 and Pin11 also output low level while HEF4053BP's Pin4 is connected with Pin5, Pin15 with Pin2 and Pin14 with Pin12. In this case, select YUV signals output from Pin28, Pin29 and Pin30 of OM8839PS. YUV signals from HEF4053BP's Pin4, Pin14 and Pin15 are sent to Pin27, Pin31 and Pin32 of OM8839PS respectively.

4) Luminance channel

The luminance channel of the chassis is all integrated in OM8839PS which includes a black level

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

stretcher, definition control circuit and coring circuit besides common circuits.

The black level stretcher is one of key circuits for improving picture quality. The circuit detects and compares light black level in luminance signal to the pedestal level. If the former is less than the latter, the circuit stretches to black level; if equals, it doesn't stretch. As a result, the light black part becomes dark black after stretched, thus improving the contrast, removing blurring picture and delivering more lifelike night scene. In OM8839PS, the TV improves gain of the luminance signal amplifier to stretch level and stretching differs depending on amplitudes and contrasts of input signals.

The definition controller in OM8839PS uses a delay crisping circuit with an on/off coring circuit (to decrease noise) built-in, in which a 6 bit D/A converter controls delay time of the luminance signal with crisping up to 63 levels. The crisping circuit decides delay amount and sharpening degree of the generated crisping signal according to amplitude of the luminance signal.

After processed, the luminance signal is output from Pin 28 of OM8839PS to HEF4053BP (ND01), in which the signal is switched over with the luminance signal from a DVD player, and then sent to Pin 27 of OM8839PS.

5) Chroma channel

The chroma channel in OM8839PS includes a ACC circuit, ACL circuit, sub-carrier restorer, PAL/NTSC/SECAM demodulator, 1H baseband delay line circuit, killer identification circuit and system detector, all of which are controlled by the I^2C bus.

The chroma signal selected out by the Y/C switchover switch in OM8839PS is sent to the chroma channel for chroma amplifying and being controlled by ACC and ACL, and then output in four ways: First set is sent to the APC circuit which discriminates the color sync signal and sub-carrier signal output from VCXO. The error signal generated herefrom controls frequency and phase of VCXO. Externally connect OM8839PS' Pin36 to the filtering circuit (including C223, C224 and R218) of APC, Pin34 to Z202 3.58MHz crystal oscillator of VCXO.

Second and third sets of chroma signals are sent into the B-Y/ R-Y demodulators to demodulate out B-Y and R-Y color difference signals. Forth set is sent into the killer detector and system identification detector. The detecting result controls chroma signal processor through I^2C bus. ACC and ACL detectors are also controlled by the I^2C bus.

The demodulated R-Y and B-Y color difference signals are output from OM8839PS' Pin29 and Pin30 respectively after processed by the 1H baseband delay line, and then sent to Pin31 and Pin32 of OM8839PS after switched over with the R-Y and B-Y signals from a DVD player.

6) RGB circuit

In OM8839PS (N301), the RGB circuit consists of a color difference matrix, chroma control, tint control, contrast control, dynamic skin tone adjustment, blue level stretching, black current continuous correction (dark balance auto correction) and RGB switch circuit.

The B-Y and R-Y color-difference signals input from OM8839PS' Pin31 and Pin32 are mixed out a G-Y color-difference signal in the color-difference matrix after through controls of contrast, chroma and dynamic skin tone. Then in the primary matrix, the three color-difference signals mix with the Y luminance signal input from Pin27 in a certain proportion to develop R, G, B primary color signals, which mix with character R, G, B signals input from Pin23, Pin24 and Pin25 and are output from

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

Pin19, Pin20 and Pin21 to the video amplifier after through blue level stretching and white balance correction.

7) Video amplifier

The video amplifier of the chassis mainly contains a TDA6107Q.

G, R, B signals output from OM8839PS′ Pin19, Pin20 and Pin21 are sent into the video amplifier through Pin1, Pin2 and Pin3 of TDA6107Q. After amplified by the differential circuit in TDA6107Q, the three signals are output from Pin7, Pin8 and Pin9 to regulate cathodes of the CRT and drive it to display pictures.

TDA6107Q′s Pin5 outputs Iom black level detecting current to OM8839PS′ Pin18 to complete auto dark balance correction.

NG01′s Pin6 inputs +195V voltage to provide enough operating voltage for the video amplifying stage and ensure it wide dynamic range. RY04, RY04A, CY01, CY01A and CY02 are formed into a decoupling filtering circuit on the +195V voltage-supplying terminal.

8) Scan velocity modulator (VM circuit).

The scan velocity modulator (VM circuit) is one of key circuits to improve picture quality. With functions similar to those of the horizontal detail corrector, the VM circuit fetches out quick changing edge from the luminance signal to modulate horizontal scan velocity of electron beams, thus delivering more vivid and sharper picture edges.

From the circuit diagram, it′s can be seen that the luminance signal output from OM8839PS′ Pin28 is sent to the VM PCB through XSK01 connector. After amplified by VQ001, VQ006 and VQ007, push-pull amplified by VQ003 and VQ004, and differentiated by RV02 and CV012 on the VM PCB, the luminance signal is fetched out a VM pulse signal which is sent to the VM coil after push-pull amplified by VQ008, VQ009, VQ010, VQ011, VQ015 and VQ016, and then push-pull power amplified by VQ017, VQ018, VQ019 and VQ020 to develop the related magnetic field to modulate electronic scan, thus improving definition of pictures.

YS character blanking signal from Pin25 of N001 microcontroller is sent to base of VQ005. When YS signal outputs high level, VQ005 saturates and conducts to AC ground base of VQ006 and bypass ground the luminance signal. By this means no signal is input to the VM circuit so that the circuit is cut out to avoid blur to characters on the screen. When N001′s Pin25 outputs low level, VQ005 cuts off and the VM circuit returns to normal operation.

4. Scan Signal Processor

The scan system includes horizontal/vertical scan circuits, which provides proper horizontal/vertical sawtooth current respectively synced by horizontal/vertical sync signals to the horizontal/vertical deflection yokes to control three electron beams in CRT to synchronously scan from left to right and up and down, thus ensuring correct aspect ratio and good-linear raster in CRT.

The scan circuit of the chassis comprises a scan small signal processor (in OM8839PS), line drive stage, horizontal output circuit stage, vertical output stage, high-voltage stabilizer, etc.

1) Sync separator

The sync separator is to separate out horizontal/vertical sync signals from the video signal to control

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

horizontal/vertical scan respectively, thus obtaining stable pictures. In OM8839PS, the TV/Video switch circuit outputs luminance signals in two ways: One set of signal is sent to the sync separator for amplifying, clamping and compressing video signal, and then cutting sync pulse from first 50% sync amplitude, which is output after shaped and amplified. One set of sync pulse signal, as a reference signal, is sent to the AFC1 circuit; another is sent to the vertical sync separator to separate out a vertical sync signal.

2) Horizontal oscillator and horizontal AFC circuits

The horizontal oscillator in OM8839PS is a fully integrated voltage-control oscillator whose free oscillating frequency is 2fH. The oscillator is also controlled by the fsc sub-carrier frequency to adapt to multi-system reception. The horizontal scan circuit in OM8839PS is controlled by two AFC circuits for horizontal sync, of which AFC1 is used to lock oscillating frequency and phase of the horizontal oscillator and AFC2 to correct phase of line drive pulse output from Pin40 of OM8839PS.

The AFC1 circuit, horizontal oscillator, horizontal divider and low-pass filter externally connected to Pin43 are formed into the first phase-locked loop (PLL). AFC1 discriminator, mainly as a multiplier, has two input signals: One is a horizontal sync pulse sent by the sync separator which functions as a reference of horizontal scan frequency and phase from TV broadcast station; another is a 2 fH signal generated from the horizontal oscillator which later is divided to a horizontal frequency pulse. The signal functions as a comparison signal representing horizontal scan frequency and phase of the TV. After the two signals compare phase in AFC1, error current directly proportional to the phase difference is generated, which is processed into DC error control voltage to adjust oscillating frequency and phase of the horizontal oscillator after filtered by the low-pass filter comprising C231, R230 and R222 externally connected to Pin43 and finally lock the frequency. Time constant of the low-pass filter decides interference-proof ability of horizontal sync, horizontal sync hold range and sync input range.

The AFC2 circuit and phase shifter in the line pre-drive stage are formed into the second phase-locked loop (PLL) to correct phase of the horizontal frequency signal output from Pin40. AFC2 mainly formed of a discriminator has also two input signals: One is a horizontal frequency pulse from the horizontal divider functioning as a reference signal for the frequency and phase in AFC1 PLL are locked by the horizontal sync pulse. Another is a comparison signal, a horizontal flyback pulse output from Pin1 of T402 FBT. The pulse is sent to the AFC2 circuit from Pin41 of TDA8844 after pulse shifted by C476, R443 and R446 and pulse shaped by VD481, VD482 and VD487. Through phase comparison, the two signals are processed into an error signal to control phase-shift angle and adjust the horizontal frequency pulse phase output from Pin40, thus controlling start time of the horizontal flyback and positive/negative peak of the horizontal scan current.

3) Horizontal consistency detector

The circuit is used to check if the horizontal oscillating pulse is synchronous with the sync pulse in signal or not. If not, time constant of the filter controlling AFC1 control loop keeps small (in the Capture mode). Once sync, the time constant becomes big (in the Hold mode) after detected by the current. The detector is also used to identify receiving signal.

4) Vertical divider

The vertical divider is to divide the 2fH pulse provided by the horizontal oscillator to develop a vertical

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

frequency pulse. Meanwhile vertical sync pulse output from the vertical sync separator resets the vertical divider, ensuring strict sync of the generated vertical frequency pulse. Thus a vertical oscillator is not required, neither is vertical sync adjustment. The strictly synced vertical frequency pulse is sawtooth-converted to a vertical sawtooth to drive the vertical drive stage after through geometric distortion correctness. Then OM8839PS′ Pin46 and Pin47 output positive/negative sawtooths to the vertical output stage. Externally connect Pin51 to C233 sawtooth generation capacitor.

5) Line drive and horizontal output circuit

Similar to that of conventional TVs, the line drive and horizontal output stage comprises discrete components including a V432 line drive triode, V433 horizontal output triode, T431A line drive transformer and T402 FBT.

Line drive pulse output from OM8839PS′ Pin40 is coupled to base of V433 by T431A after amplified and pulse shaped by V432 to control V433 on/off and develop sawtooth scan current in the horizontal deflection yoke so that electron beams in CRT scan horizontally and over 1KV horizontal flyback pulse is formed on collector of the FBT.

The same-type connection between primary and secondary of T431A line drive transformer should develop an invert-polarity drive relation between the line drive triode and horizontal output triode. Paralleled C432, C434 and R433 in primary of T431A are formed into a damping resistor to prevent primary of T431A from generating negative peak pulse during V432 cutoff and avoid breakdown of the line drive triode.

R456, R457, R458, R458A, R459, R460, VD457A, C479, C461, C462 and V436 are formed into an ABL circuit, of which V436 is a beam current detecting triode with base biasing voltage of 3.3V. With normal CRT brightness, the beam current is low enough to develop over 3.3V base voltage for V436 and cut off V436, thus the beam current control circuit in OM8839PS stopping operation. With too high CRT brightness, the beam current becomes higher, resulting in dropping of V436 base voltage and conducting of V436 to compel DC voltage for Pin19, Pin20 and Pin21 of OM8839PS to drop and CRT cathode voltage to rise through Pin22, thus decreasing brightness of the raster. V436 has a function of enlarging current to get wide current control range to OM8839PS′ Pin22.

In addition, the horizontal flyback pulse output from T402′s Pin8 is sent into OM8839PS′ Pin50, of which high voltage alteration is fed back to Pin50 to control the geometric distortion corrector in OM8839PS, thus high voltage alteration not affecting its operation

VD481 and VD482 are formed into a two-way amplitude limiter, which stabilizes amplitude of the flyback pulse fed back to OM8839PS′s Pin41 to avoid damage to OM8839PS caused by rising of pulse amplitude due to sparking.

During horizontal scan flyback, large-amplitude flyback pulse is formed on collector of V433 horizontal output triode for the circuits′ use after transformed by T402 FBT.

The horizontal flyback pulse is voltage-raised and rectified by high-voltage silicon rectifier stack to develop high voltage, focus voltage and screen voltage to supply the CRT.

The horizontal flyback pulse is output from Pin3 after T402 decreases its voltage and rectified by VD440 and filtered by C459 to develop +200V voltage for use in the video amplifying output stage.

One set of low voltage pulse from T402′s Pin7 is rectified by VD437 and filtered by C449 to develop +

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

16V-3 voltage to the vertical output stage. Another set is rectified by VD442 and filtered by C463 to develop a DC voltage to the power-off spot killer.

Low voltage pulse from T402′s Pin5 is rectified by VD438 and filtered by C448 to develop +45V voltage to the vertical output stage and +33V generator.

Horizontal flyback pulse from T402′s Pin1 is sent to Pin41 of OM8839PS after shaped and clamped.

6) Vertical output stage circuit

The chassis uses a TDA8350Q-N6 vertical output IC, a BTL bridge power amplifier. Positive and negative vertical sawtooth voltages output from Pin46 and Pin47 of OM8839PS are input to Pin2 and Pin1 of TDA8350Q respectively and output from Pin5 and Pin9 after though power amplification to the vertical deflection yoke on the CRT to develop sawtooth scan current in the vertical deflection yoke. Meanwhile, a scan magnetic field is formed around the vertical deflection yoke to control electron beams scanning vertically.

To improve efficiency of the vertical scanner, reduce power consumption and ensure vertical flyback time not to be delayed, the vertical output stage in TDA8350Q uses low supply voltage (+16V) during forward stroke and high supply voltage (+45V) during flyback, both of which are switched over by the flyback switch in TDA8350Q. Pin 4 is the +16V voltage supplying terminal and Pin8 is +45V voltage supplying terminal. After inverted and amplified by V001, the vertical flyback pulse voltage output from TDA8350Q′s Pin10 is sent to Pin20 of N001 microcontroller to position characters.

TDA8350Q′s Pin3 is the vertical negative feedback input terminal to improve vertical linearity. R410 is a sampling resistor, and C406 a DC insulating capacitor. R409 and C405 are paralleled with two ends of the vertical deflection yoke respectively, having functions of phase compensation and damping to prevent the vertical deflection yoke from generating high frequency oscillation

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

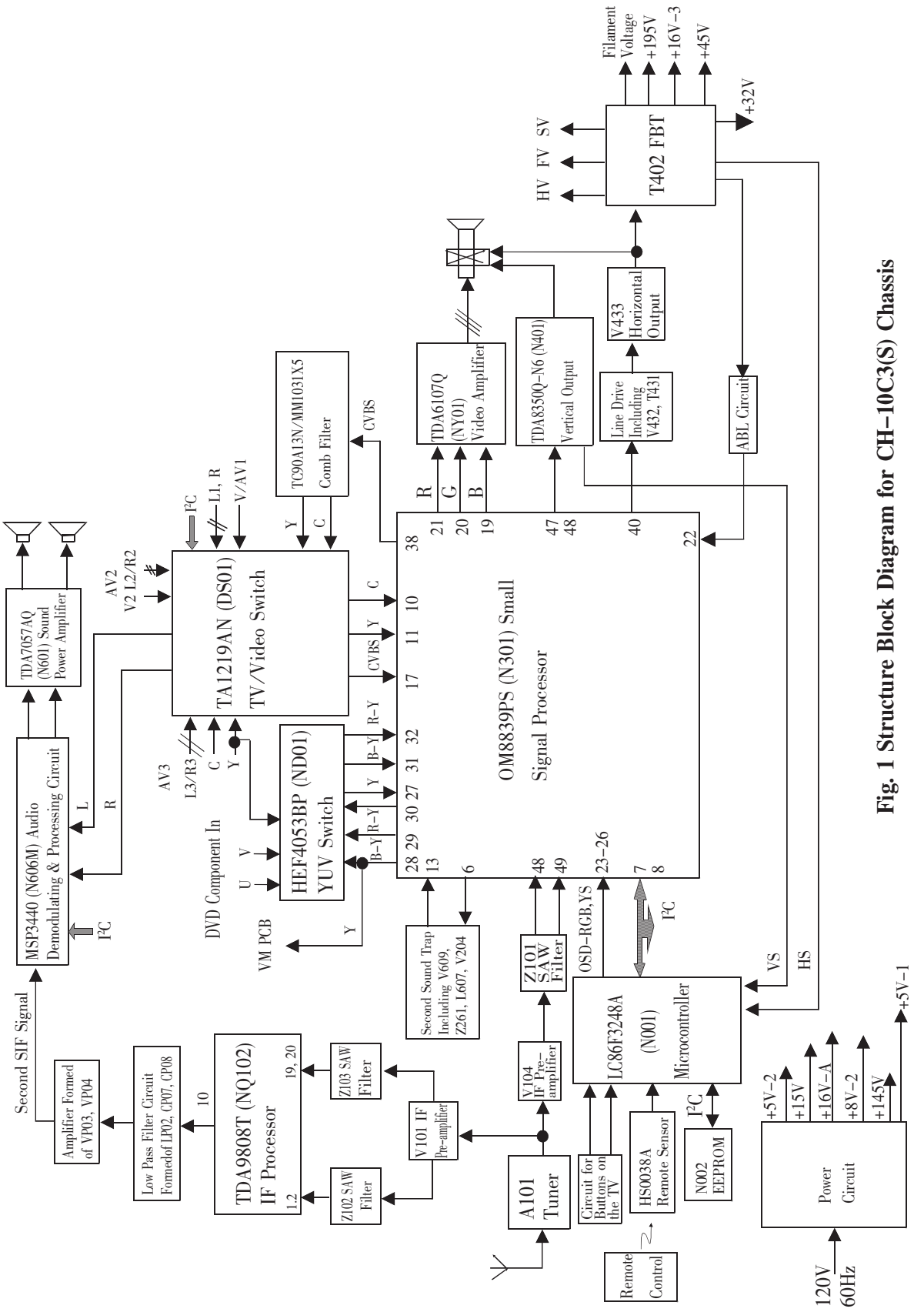


Fig. 1 Structure Block Diagram for CH–10C3(S) Chassis

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

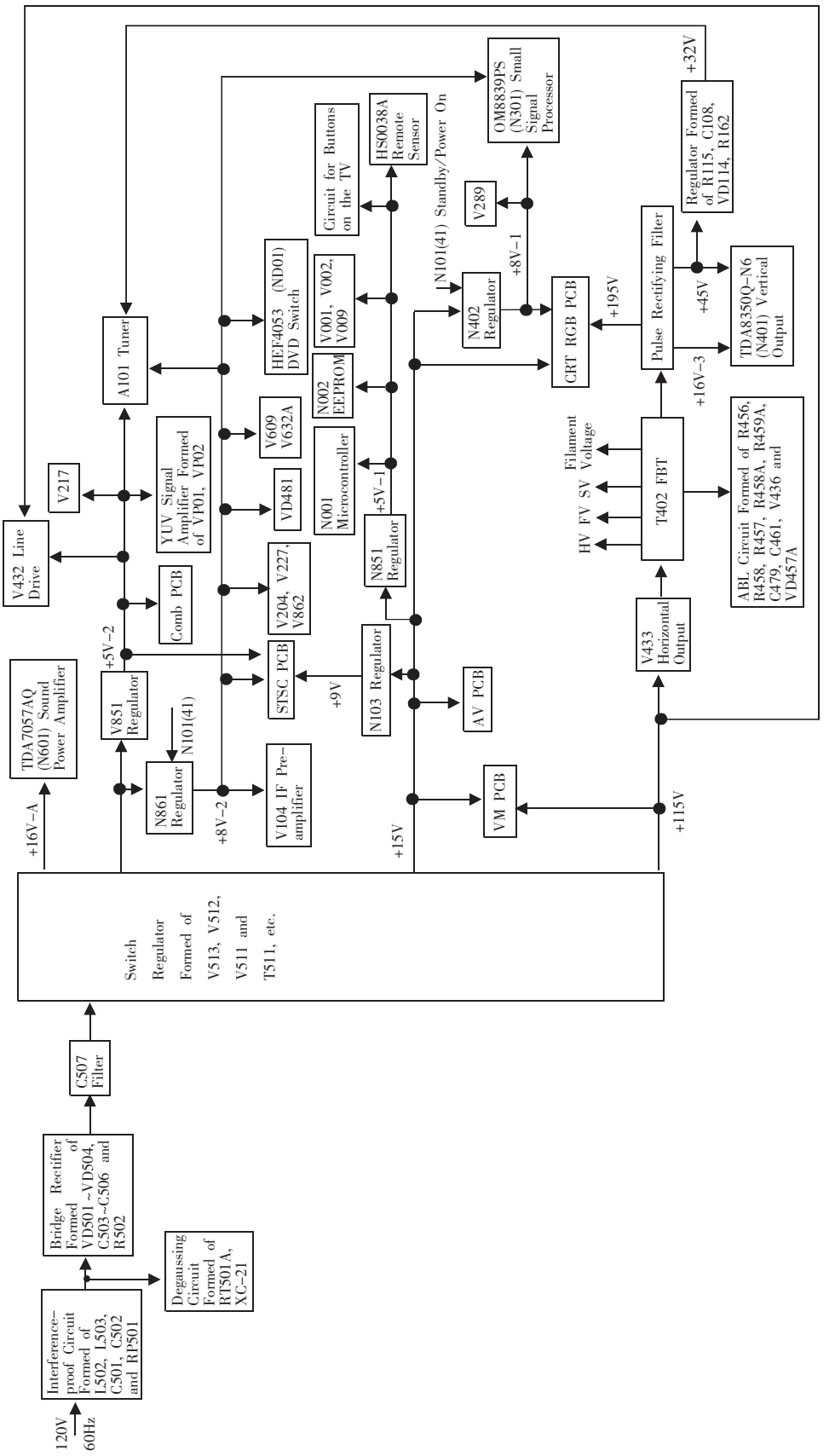


Fig.2 Block Diagram for CH–10C3(S) Supply Voltage System

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

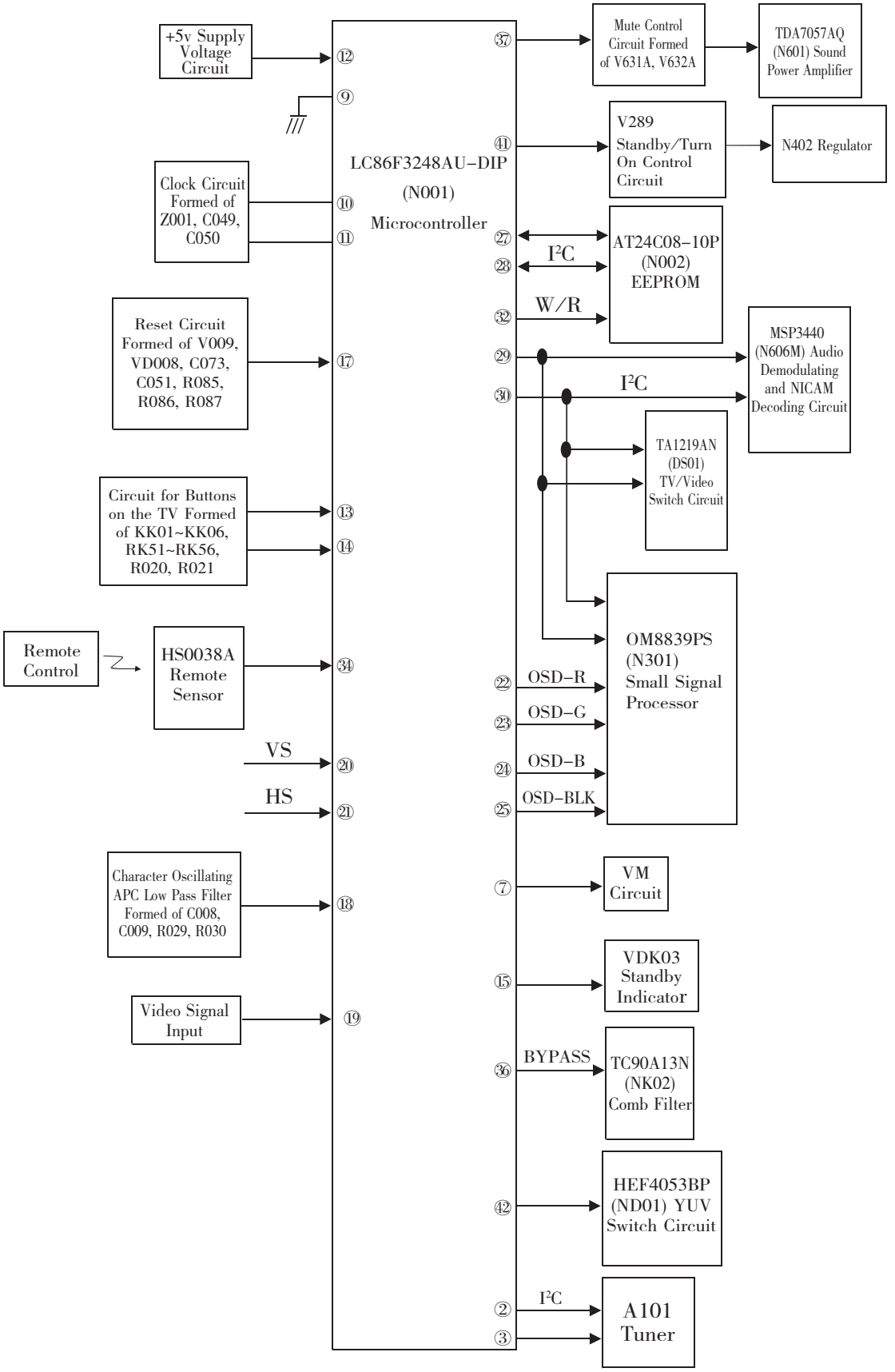


Fig. 3 Block Diagram for CH–10C3(S)´ Remote Control Structure

IC DATA AND WAVEFORMS OF KEY POINTS

LC86F3248A (D701) 8–Bit Single Chip Microcontroller

1. Overview

The LC863264/56/48/40A are 8–bit single chip microcontrollers with the following on–chip functional blocks:

–CPU:Operable at a minimum bus cycle time of 0.424μs

–On–chip ROM capacity

Program ROM:64K/56K/48K/40K bytes

CGROM:16K bytes

–On–chip ROM capacity: 640 bytes

–OSD RAM: 352×9 bits

–Closed–Caption TV controller and the on–screen display controller

–Closed–Caption data slicer

–Four channels×8–bit AD Converter

–Three channels×7–bit PWM

–Two16–bit timer/counters, 14–bit base timer

–8–bit synchronous serial interface circuit

–IIC–bus compliant serial interface circuit (Multi–master type)

–ROM correction function

–16–source 10–vectored interrupt system

–Integrated system clock generator and display clock generator

Only one X′ tal oscillator (32.768kHz) for PLL reference is used for both generators

TV control and the Closed Caption function

All of the above functions are fabricated on a single chip

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

LC86F3248A (continued)

2. System Block Diagram

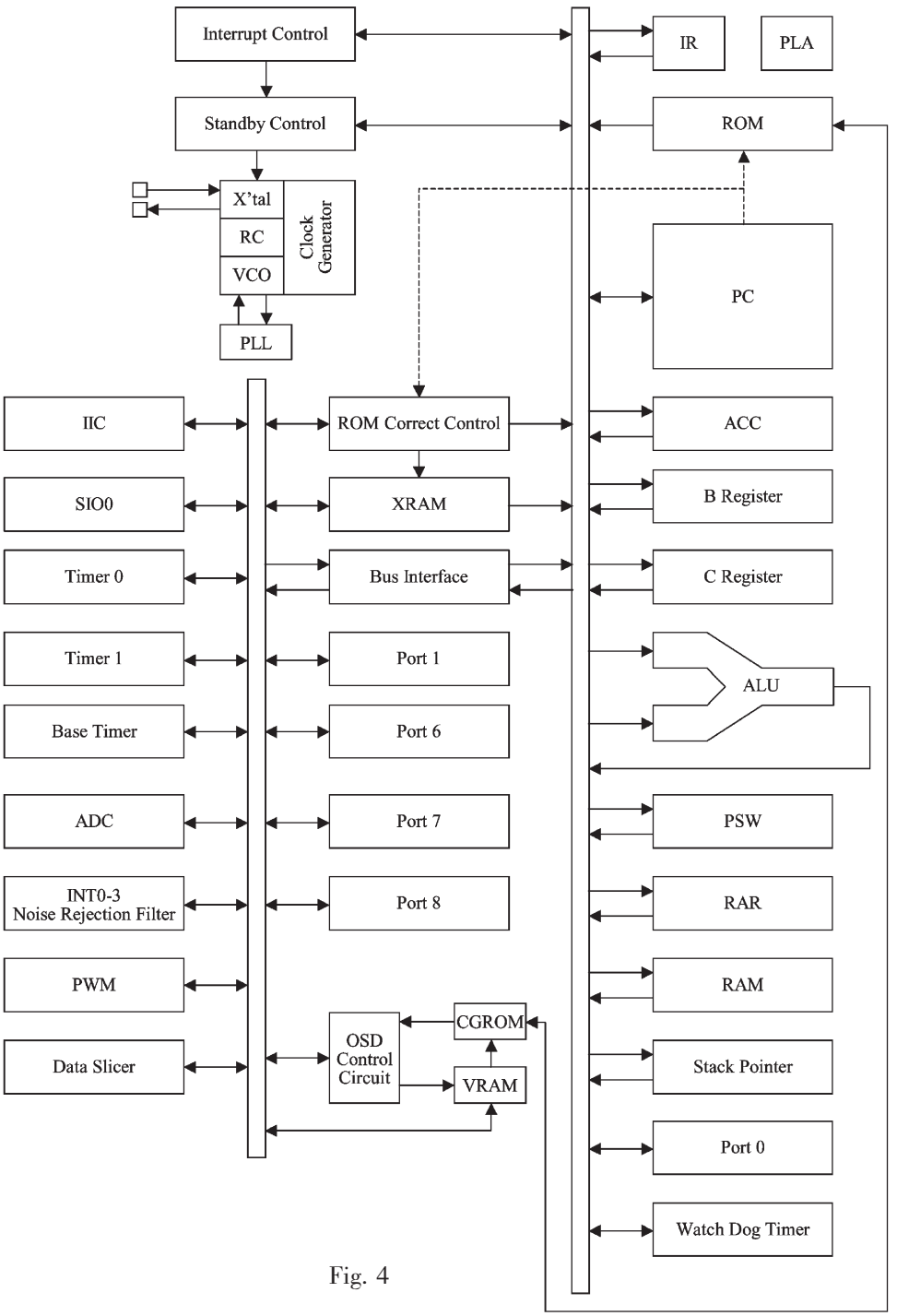


Fig. 4

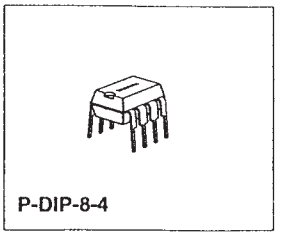
3. Refer to Table 2 about Functions and Service Data of LC86F3248A´s Each Pin.

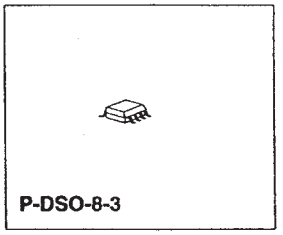
IC DATA AND WAVEFORMS OF KEY POINTS (continued)

AT24C08 EEPROM

1. Features

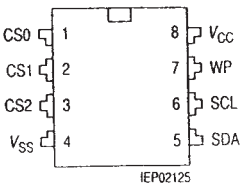
- ·Data EEPROM internally organized as 1024/2048 bytes and 64/128 pages×16 bytes
- ·Page protection mode, flexible page-by-page hardware write protection
- -Additional protection EEPROM of 64/128 bits, 1 bit per data page
- -Protection setting for each data page by writing its protection bit
- -Protection management without switching WP pin
- ·Low power CMOS
- ·Vcc=2.7 to 5.5V operation
- ·Two wire serial interface bus, I^2C-Bus compatible
- ·Filtered inputs for noise suppression with Schmitt trigger
- ·Clock frequency up to 400 kHz
- ·High programming flexibility
- -Internal programming voltage
- -Self timed programming cycle including erase
- -Byte-write and page-write programming, between 1 and 16 bytes
- -Typical programming time 6 ms(<10ms) for up to 16 bytes
- ·High reliability
- -Endurance 10^6 cycles[1)]
- -Data retention 40 years[1)]
- -ESD protection 4000 V on all pins
- ·8 pin DIP/DSO packages
- ·Available for extended temperature ranges
- -Industrial: -40℃ to +85℃
- -Automotive: -40℃ to +125℃



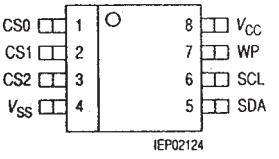


2. Pin Configuration

P-DIP-8-4



P-DSO-8-3



3. Block Diagram

4. Refer to Table 3 about Functions and Service Data of AT24C08´s Pins.

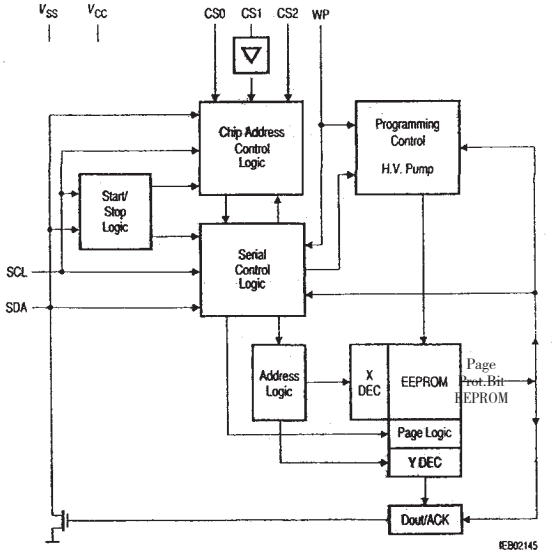


Fig. 5

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA8839

I²C–bus Controlled PAL/NTSC/SECAM TV Processors

1. Features

The following features are available in all IC´s:

- Multi–standard vision IF circuit with PLL demodulator
- Alignment–free multi–standard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Audio switch
- Flexible source selection with CVBS switch and Y (CVBS)/C input so that a comb filter can be applied
- Integrated chrominance trap circuit
- Integrated luminance delay line
- Asymmetrical peaking in the luminance channel with a (defeatable) noise coring function
- Black stretching of non–standard CVBS or luminance signals
- Integrated chroma band –pass filter with switchable centre frequency
- Dynamic skin tone control circuit
- Blue stretch circuit which offsets colours near white towards blue
- RGB control circuit with "Continuous Cathode Calibration" and white point adjustment
- Linear RGB inputs and fast blanking
- Possibility to insert a "blue back" option when no video signal is available
- Horizontal synchronization with two control loops and alignment–free horizontal oscillator
- Vertical count–down circuit
- Vertical driver optimised for DC –coupled vertical output stages
- I²C–bus control of various functions
- Low dissipation (850 mW)

2. General Description

The various versions of the TDA 884X/5X series are I²C –bus controlled single chip TV processors which are intended to be applied in PAL, NTSC, PAL/NTSC and multi–standard television receivers.

These IC´s are nearly pin compatible with the TDA 837× TV processors but have a higher degree of integration because the delay line

(TDA4665 function) and the SECAM decoder have been intagrated.In addition to these functions some additional features have been added like "Continuous Cathode Calibration" (2 –point black current loop which results in an accurate biasing of the 3 guns), adjustable luminance delay time, blue stretching and dynamic skin tone ("flesh")

control.

Functionally the IC series is split up in 3 categories, viz

- Versions intended to be used in economy TV receivers with all basic functions (envelope: S–DIP 56 and QFP64)
- Versions with additional features like E–W geometry control, H–V zoom function and YUV interface which are intended for TV receivers with 110° picture tubes (envelope: S–DIP 56)
- Versions which have in addition a second RGB input with saturation control and a second CVBS output (envelope:QFP 64)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA8839（continued)

3. Block Diagram

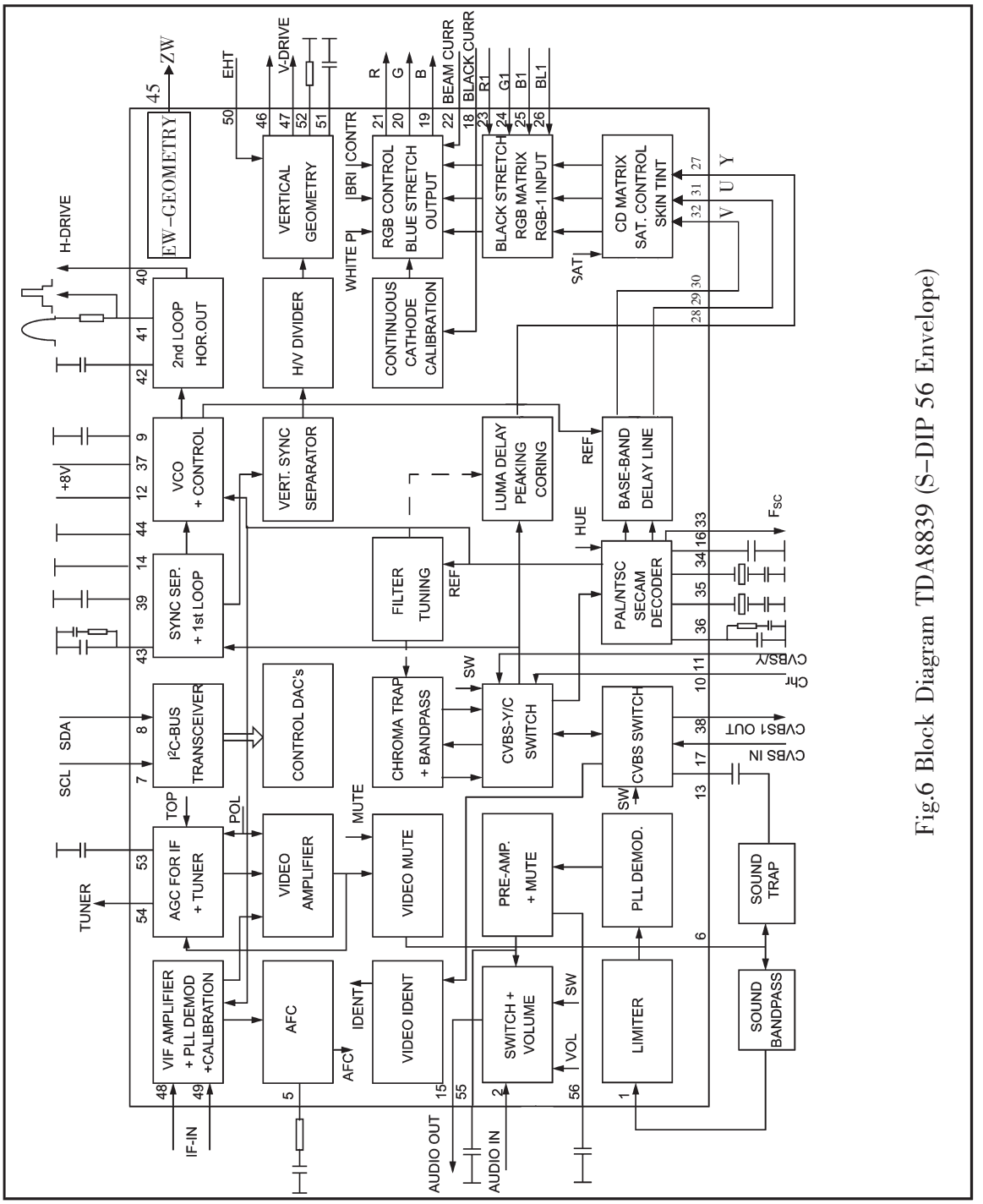


Fig.6 Block Diagram TDA8839 (S–DIP 56 Envelope)

4. Refer to Table 4 about Functions and Service Data of TDA8839´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA8350Q

DC–coupled Vertical Deflection and East–West Output Circuit

1. Features

- Few extemal components
- Highly efficient fully DC–coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - short–circuit of the output pins
  - short–circuit of the output pins to Vp
- High EMC immunity due to common mode inputs
- Temperature (thermal) protection
- East–West output stage with one single conversion resistor.

2. General Description

The TDA8350Q is a power circuit for use in 90° and 110° colour deflection systems for field frequencies of 50 to 120 Hz. The circuit provides a DC driven vertical deflection output circuit, operating as a highly efficient class G system and an East–West driver for sinking the diode modulator current.

3. Block Diagram

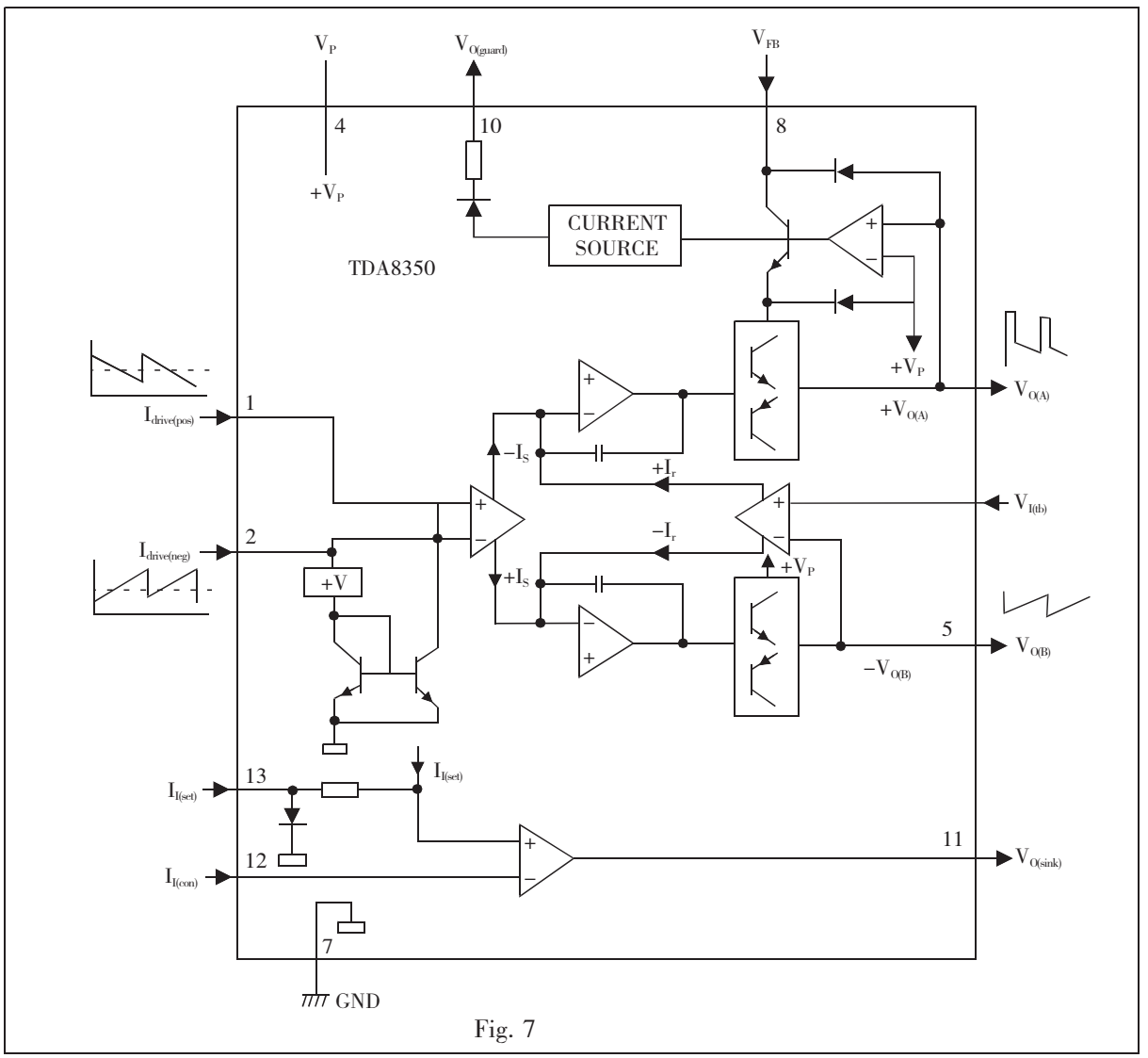


Fig. 7

4. Refer to Table 5 about Functions and Service Data of TDA8350Q´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA7057AQ

2×8W Stereo BTL Audio Output Amplifier with DC Volume Control

1. Features

- ·DC volume control
- ·Few external components
- ·Mute mode
- ·Thermal protection
- ·Short–circuit proof
- ·No switch –on and switch –off clicks
- ·Good overall stability
- ·Low power consumption
- ·Low HF radiation
- ·ESD protected on all pins.

2. General Description

The TDA7057AQ is a stereo BTL output amplifier with DC volume control. The device is designed for use in TVs and monitiors, but is also suitable for battery–fed portable recorders and radios.

Missing Current Limiter (MCL)

A MCL protection circuit is built–in. The MCL circuit is activated when the difference in current between the output terminal of each amplifier exceeds 100 mA (typical 300 mA). This level of 100 mA allows for single–ended headphone applications.

3. Block Diagram

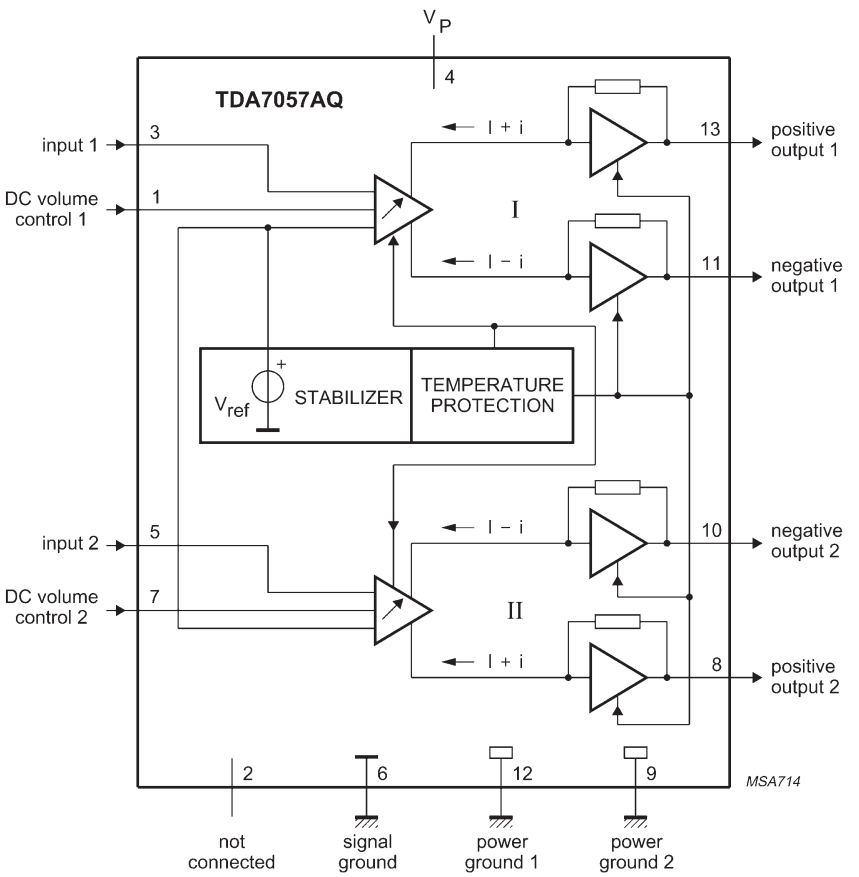


Fig. 8

4.Refer to Table 6 about Functions and Service Sata of TDA7057AQ´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA6107Q

Triple Video Output Amplifier

1. Features

- Typical bandwidth of 5.5 MHz for an output signal of 60 V (p-p)
- High slew rate of 900 V/μS
- No external components required
- Very simple application
- Single supply voltage of 200 V
- Internal reference voltage of 2.5 V
- Fixed gain of 50
- Black-Current Stabilization (BCS) circuit
- Thermal protection.

2. General Description

The TDA6107Q includes three video output amplifiers in one plastic DIL-bent-SIL 9-pin medium power (DBS9MPF) package (SOT 111-1), using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour CRT directly. To obtain maximum performance, the amplifier should be used with black-current control.

3. Ordering Information

Type Number	Package		
	Name	Description	Version
TDA6107Q	DBS9MPF	Plastic DIL-bent-SIL medium power package with fin; 9 leads	SOT111-1

4. Block Diagram

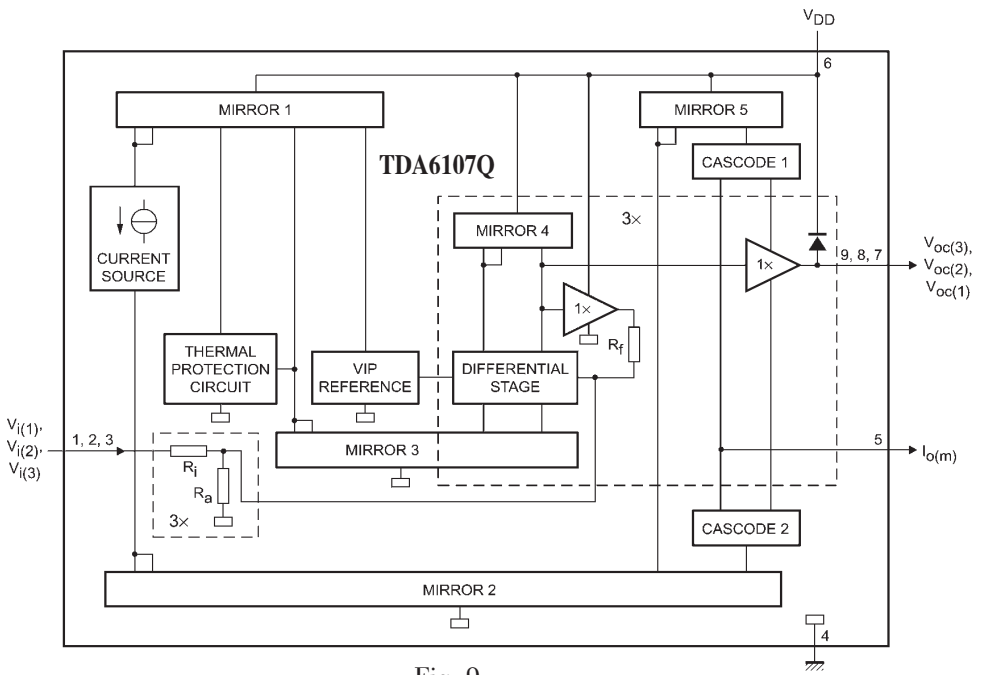


Fig. 9

4. Refer to Table 7 about Functions and Service Data of TDA6107Q´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

HEF4053BP

Triple 2–channel Analog Multiplexer/Demultiplexer

1. Description

The HEF4053BP is a triple 2–channel analog multiplexer/demultiplexer with a common enable input ($\overline{E}$). Each multiplexer/demultiplexer has two independent inputs/outputs (Y_0 and Y_1), a common input/output (Z), and select inputs (Sn). Each also contains two–bidirectional analog switches, each with one side connected to an independent input/output (Y_0 and Y_1) and the other side connected to a common input/output(Z).

With ($\overline{E}$) LOW, one of the two switches is selected (low impedance ON–state) by Sn. With $\overline{E}$ HIGH, all switches are in the high impedance OFF–state, independent of S_A to S_C.

V_{DD} and V_{SS} are the supply voltage connections for the digital control inputs (S_A to S_C and $\overline{E}$).

The V_{DD} to V_{SS} range is 3 to 15V.The analog inputs/outputs (Y_0,Y_1 and Z) can swing between V_{DD} as a positive limit and V_{EE} as a negative limit. V_{DD}–V_{EE} may not exceed 15 V.

For operation as a digital multiplexer/demultiplexer,V_{EE} is connected to V_{SS} (typically ground).

2. Block Diagrams

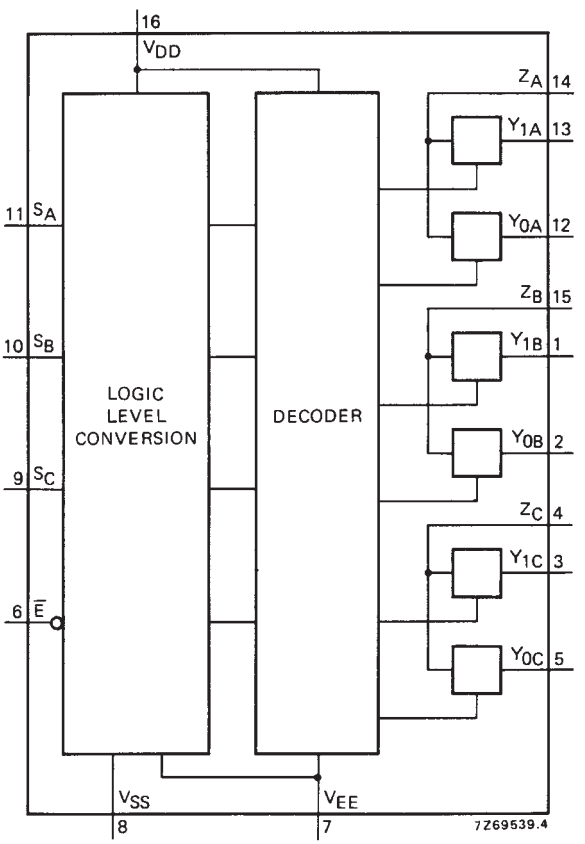
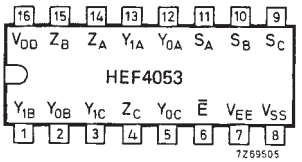


Fig. 10

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

HEF4053BP (contined)



Pinning Diagram

Pinning

Y_{0A} to Y_{0C}	Independent inputs/outputs
Y_{1A} to Y_{1C}	Independent inputs/outputs
S_A to Sc	Select inputs
E	Enable input (active LOW)
Z_A to Z_C	Common inputs/outputs

3. Function Table

Inputs		Channel
E	**Sn**	**On**
L	L	Y_0n–Zn
L	H	Y_1n–Zn
H	X	none

Notes

H=HIGH state (the more positive voltage)

L=LOW state (the less positive voltage)

X=STATE is immaterial

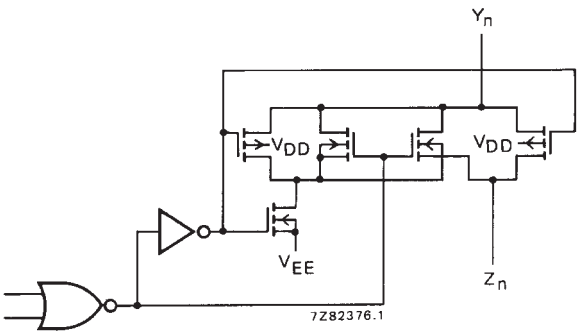


Fig. 11 Schematic Diagram (One Switch)

Ratings

Limiting values in accordance with the Absolute Maximum System(IEC 134)

Supply voltage (with reference to V_{DD}) V_{EE} −18 to + 0,5 V

Note

To avoid drawing V_{DD} current out of terminal Z, when switch current flows into terminals Y, the voltage drop across the bidirecctional switch must not exceed 0,4 V. If the switch current flows into terminal Z, no V_{DD} current will flow out of terminals Y, in this case there is no limit for the voltage drop across the switch, but the voltages at Y and Z may not exceed V_{DD} or V_{EE}

4. Refer to Table 8 about Functions and Data of IC´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

MSP34×0G

Multistandard Sound Processor Family

Release Note: Revision bars indicate significant changes to the previous edition. The hardware and software description in this document is valid for the MSP 34 ×0G version B5 and following versions.

1. Introduction

The MSP34×0G family of single–chip Multistandard Sound Processors covers the sound processing of all analog TV–Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal–in, down to processed analog AF–out, is performed on a single chip. Figure 13 shows a simplified functional block diagram of the MSP 34×0G.

This new generation of TV sound processing ICs now includes versions for processing the multichannel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively MICRONAS Noise Reduction (MNR) is performed alignment free

Other processed standards are the Japanese FM–FM multiplex standard (EIA–J) and the FM Stereo Radio standard.

Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA–J.
The MSP 34×0G has optimum stereo performance without any adjustments.

All MSP 34×0G versions are pin and software downward–compatible to the MSP 34×0D. The MSP34×0G further simplifies controlling software. Standard selection requires a single I^2C transmission only.

The MSP 34×0G has built–in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/stereo/bilingual; no I^2C interaction is necessary (Automatic Sound Selection).

The ICs are produced in submicron CMOS technology.
The MSP34 ×0G is available in the following packages: PLCC68, PSDIP64, PSDIP52 PQFP80 and PLQFP64.

2. Block Diagram

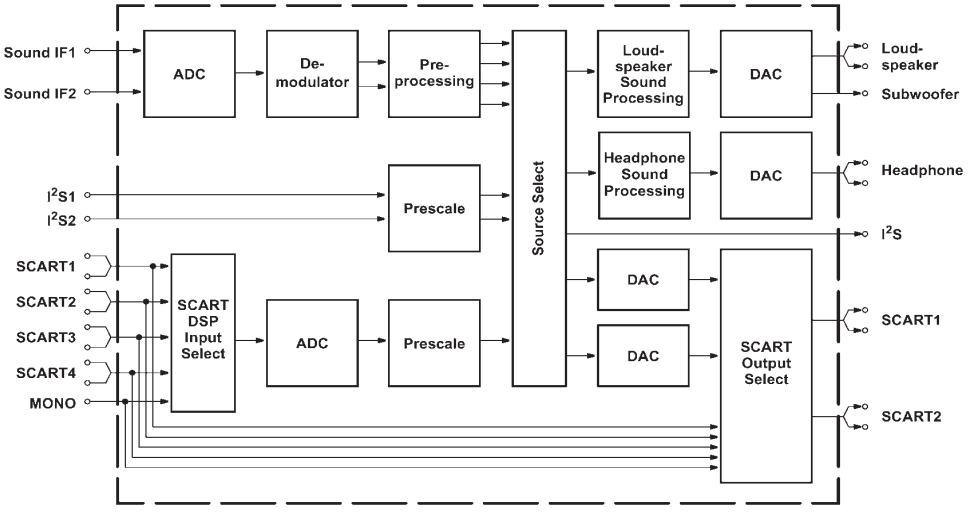


Fig. 12 Simplified Functional Block Diagram of the MSP 34×0G

3. Refer to Table 9 about Functions and Service Data of MSP 34X0G´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA9808T

Single Standard VIF–PLL with QSS–IF and FM–PLL Demodulator

1.Features

- 5V supply voltage (9V supply voltage for TDA9808(DIP20) only)
- Applicable for IFs (lntermediate Frequencies) of 38.9MHz, 45.75MHz and 58.75 MHz
- Gain controlled wide band Video IF (VIF)–amplifier (AC–coupled)
- True synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Robustness for over–modulation better than 105% due to Phase Locked Loop (PLL)–bandwidth control at negative modulated standards
- VIF Automatic Gain Comtrol (AGC) detector for gain control, operating as peak sync detector
- Tuner AGC with adjustable TakeOver Point (TOP)
- Automatic Frequency Control (AFC) detector without extra reference circuit
- AC–coupled limiter amplifier for sound intercarrier signal
- Alignment–free FM–PLL demodulator with high linearity
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode (PLL controlled); SIF AGC detector for gain controlled SIF amplifier; single reference QSS mixer for high performance
- Electrostatic Discharge (ESD) protection for all pins.

2.General Description

The TDA9808 is an integrated circuit for single standard (negative modulated) vision IF signal processing and FM demodulation, with single reference QSS–IF in TV and VTR sets.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA9808T (continued)

2. Block Diagram

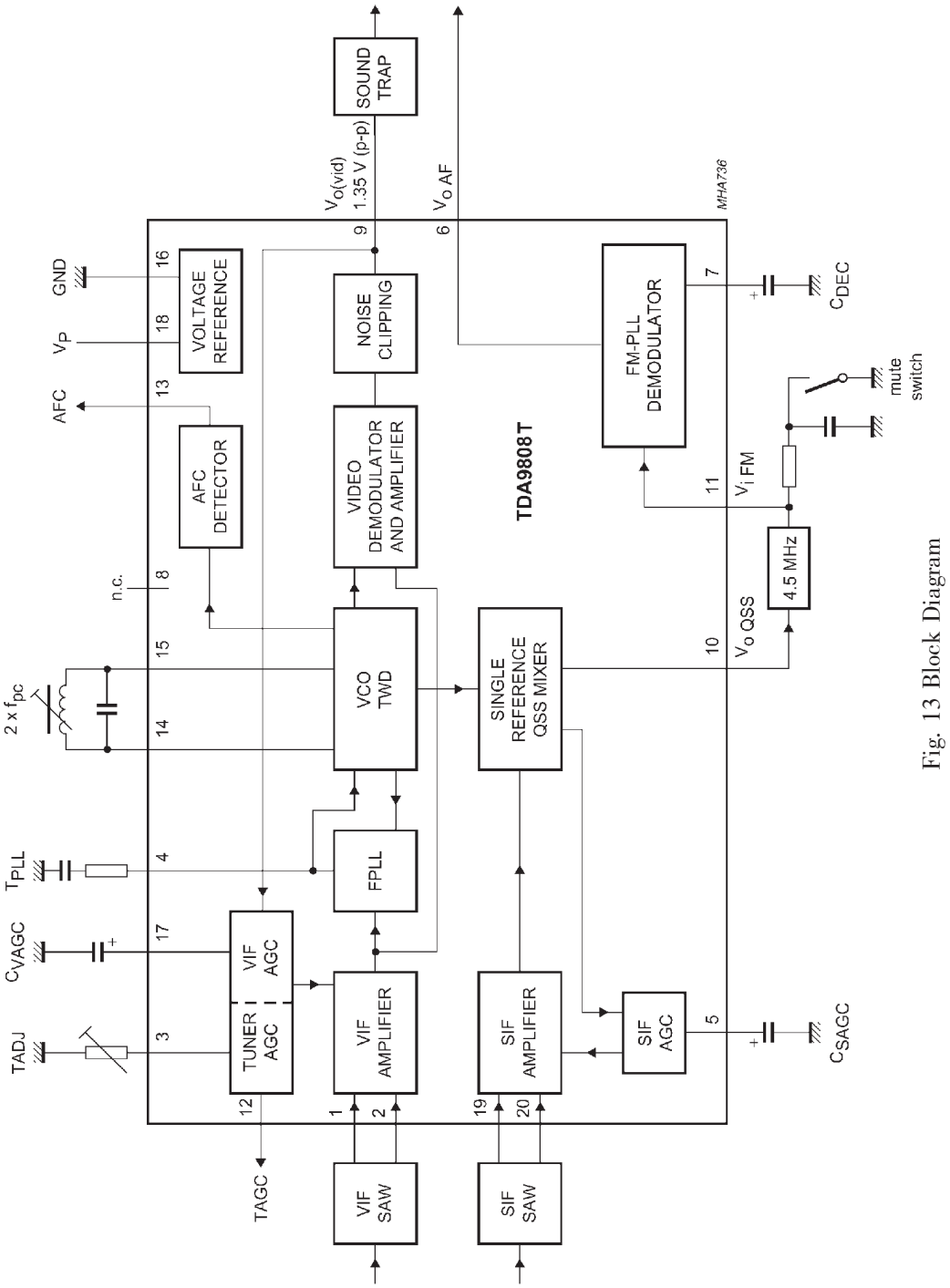


Fig. 13 Block Diagram

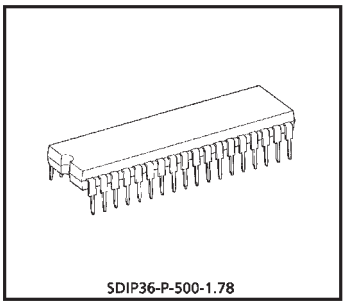
3. Refer to Table 10 about Functions and Service Data of TDA9808T´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TA1219AN

Audio/Video Switching IC for TVs

The TA1219AN is an audio/video switching IC for TV Sets. Conforming to I²C bus standards, it allows you to perform various switching operations through the bus lines by using a microcomputer. Furthermore, since the presence of a signal on its sync signal output pin can be determined by a microcomputer , it is possible to check each input/output channel (self–diagnosis).
This IC has the same pin assignments as the TA1218AN (SDIP42), a 2–channel output version of the TA1219AN, so these chips are pin compatible on pins 3 to 20 and 23 to 40 in TA1218AN.



Weight : 2.98g (Typ.)

1. Features

- I²C bus control
- Video: 5–channel inputs and 1–channel outputs (2 channels conforming to S system)
- Audio: 5–channel inputs and 2–channel outputs
- Self–diagnostic function
- ADC inputs based on European 21–pin standards
- ADC inputs based on S1/S2 terminal standards
- Switchable subaddress

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TA1219AN (continued)

2. Block Diagram

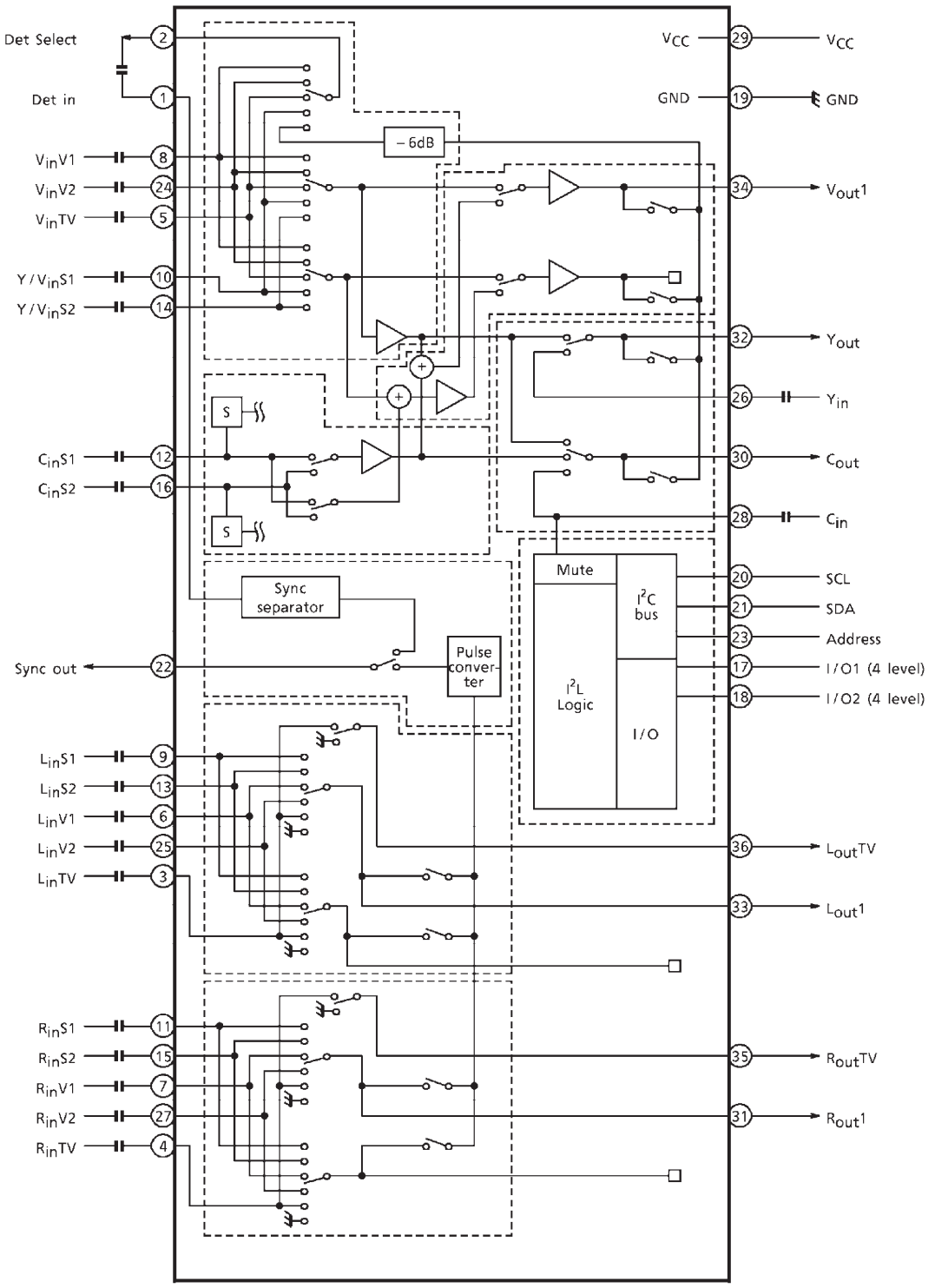


Fig. 14

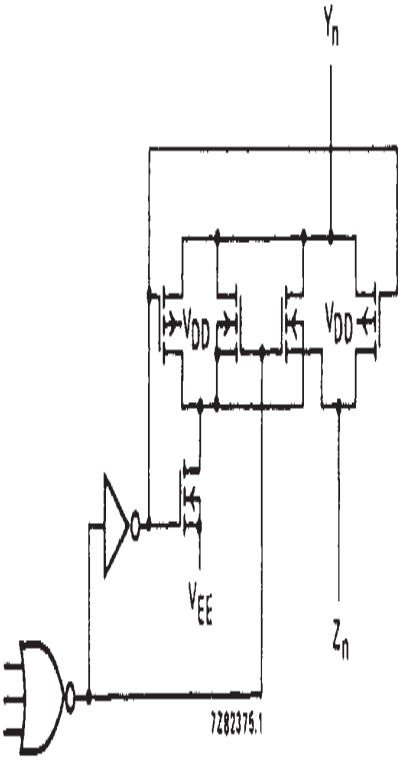
3. Refer to Table 11 about Functions and Service Data of TA1219AN´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TC90A13N

3 Line Digital Y/C Separation IC

The TC90A13N and TC90A13F separate luminance(Y) and Chrominance(c)signals from an NTSC composite video Signal. Lt employs the Toshiba original logical comb filter To Realize high performance Y/C separation at low cost



1. Features

- ·NTSC system
- ·PLL 4X multiplication circuit
- ·Sync. tip clamping circuit
- ·8bit A/D converter
- ·8bit D/A converters (2ch)
- ·2H line memory
- ·Dynamic comb filter
- ·1 line dot correction circuit
- ·Vertical enhancer
- ·Color killer mode (Y/C separation OFF)
- ·Chrominance wide band output mode
- ·SDIP28/SOP28 package
- ·5V single power supply

2. Block Diagram

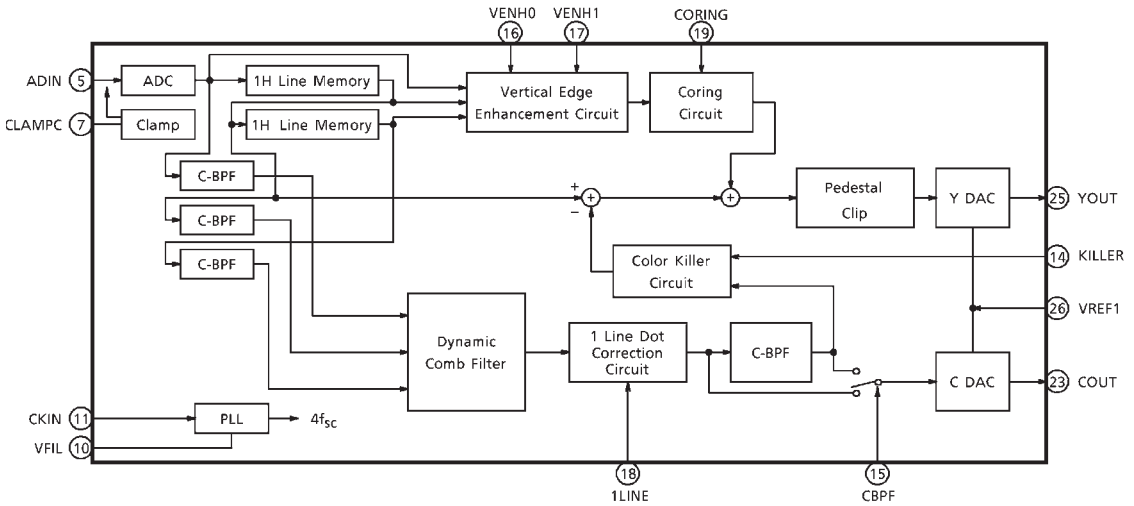


Fig. 15

3. Refer to Table 12 about Functions and Service Data of TC90A13N´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Video Amplifier

Monolithic IC MM1031

1. Outline

This IC is a 6dB amp for video signals (Y or composite signals). Gain is fixed at 6dB and it is used in 75e Signals). Gain is fixed at 6dB and it is used in 75Ω output circuits.

2. Features

1) For video signal (Y or composite) amplification
2) Built–in clamp circuit
3) 75Ω driver built in
4) Frequency response 7MHz
5) Current consumption 4mA typ.
6) Power supply voltage 5V

3. Block Diagram

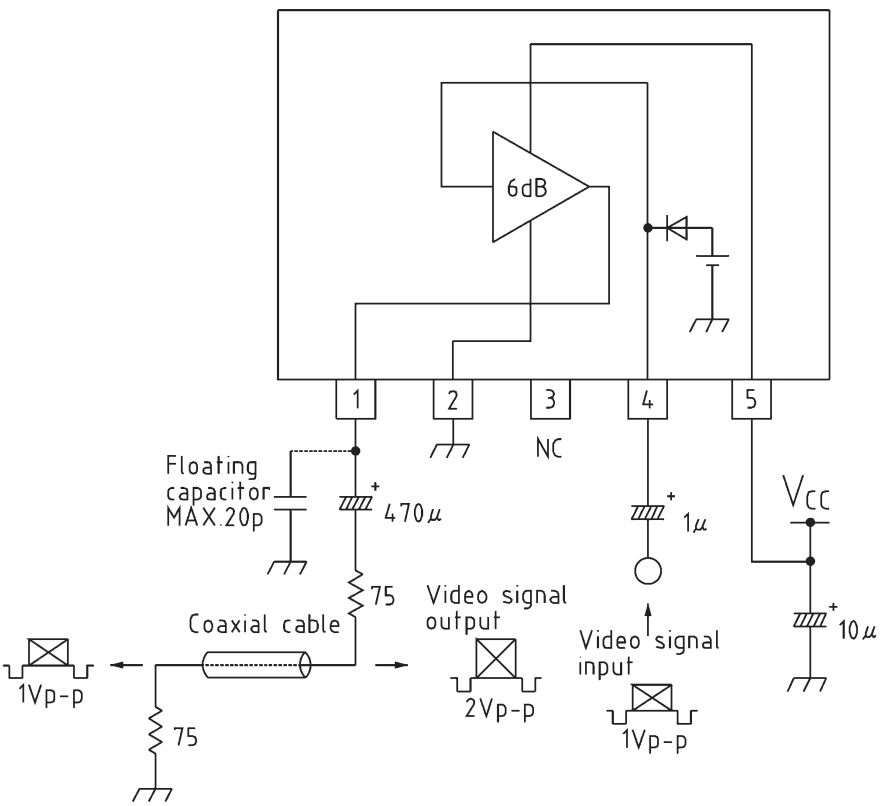


Fig. 16

4. Refer to Table 13 about Functions and Service Data of MM1031´s Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Table 2 Functions and Service Data of LC86F3248AV–DIP (N001)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Not connected	0.00	9.2	5.33
2	Clock line	4.85	9.47	5.07
3	Data line	4.82	9.47	5.05
4	Not connected	0.04	5.81	4.75
5	Not connected	0.01	9.47	5.3
6	Not connected	0.01	9.47	5.38
7	VM circuit control	4.94	9.37	5.19
8	Not connected	0	9.48	5.38
9	Ground	0.01	0.00	0.00
10	Input terminal for clock oscillating signal	1.87	9.44	6.03
11	Output terminal for clock oscillating signal	2.57	8.94	6
12	Supply voltage	4.94	3.49	3.25
13	Button–control voltage input terminal	4.94	9.4	5.28
14	Button–control voltage input terminal	4.94	9.42	5.27
15	Standby indicator control	4.94	9.5	5.45
16	Not connected	4.94	9.44	5.5
17	Reset	4.88	4.62	4.47
18	Filter	2.83	9.43	5.44
19	Video signal input terminal	2.65	9.45	5.99
20	Input terminal for vertical flyback pulse	4.72	8.65	5.08
21	Input terminal for horizontal flyback pulse	4.21	8.64	5.08
22	R character output terminal	0.00	2.12	2.11
23	G character output terminal	0.00	2.12	2.11
24	B character output terminal	0.00	2.12	2.11
25	Output terminal for fast blanking signal	0.00	1.99	1.99
26	Character level clamping	0.00	9.47	5.81
27	Clock line 0	4.94	6.93	4.89
28	Data line 0	4.94	6.89	5.1
29	Clock line 1	3.73	6.87	4.54
30	Data line 1	3.73	6.88	4.54
31	Overload detecting input terminal	4.94	3.59	3.34
32	Input terminal for selectable production modes	4.94	9.43	5.18
33	Not connected	0.00	9.47	5.46
34	Remote control input	0.00	9.47	5.43
35	Not connected	0.00	9.47	5.4
36	Comb filter direct–pass control	0.02	7.12	5.1
37	Mute	0.02	9.41	5.15
38	Not connected	0.00	9.44	5.34
39	Not connected	0.00	9.44	5.3
40	Not connected	0.00	9.44	5.38
41	Standby control	0.04	7.48	4.9
42	YUV switch control	0.04	6.07	4.93

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Table 3 Functions and Service Data of AT24C08–10P (N002)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Address input	0.00	0.00	0.00
2	Address input	0.00	0.00	0.00
3	Address input	0.00	0.00	0.00
4	Common ground	0.00	0.00	0.00
5	Clock line	4.94	6.85	4.83
6	Data line	4.94	6.89	5.15
7	PW write protect	4.94	9.58	5.31
8	Supply voltage	4.94	3.5	3.25

Table 4 Functions and Service Data of OM8839 (N301)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	SIF signal input	0.00	8.8	6.03
2	External audio signal input	3.61	8.69	6.03
3	Reference frequency resonant coil terminal	0.00	∞	∞
4	Reference frequency resonant coil terminal	0.00	∞	∞
5	PLL filter	2.45	8.54	5.79
6	Video detection output	2.77	2.19	2.19
7	Clock line	3.85	6.88	4.56
8	Two–way transmission data line	3.91	6.87	4.56
9	Gap decoupling	6.62	7.57	5.66
10	SVHS chroma signal input	1.37	8.65	5.99
11	SVHS luminance signal input	3.85	8.65	5.88
12	Supply voltage	8.22	2.09	2.09
13	Composite video signal input terminal	3.69	8.65	5.88
14	Ground	0.00	0.00	0.01
15	Audio signal output	4.1	8.74	5.96
16	Decoupling capacitor connection	0.02	∞	∞
17	Video input	3.35	8.65	5.88
18	Black current control input	5.87	8.73	5.81
19	Blue (B) signal output	2.36	5.74	5.08
20	Green (G) signal output	2.41	5.74	5.08
21	Red (R) signal output	2.39	5.74	5.08
22	Beam current control	1.77	7.78	5.84
23	Red (R) signal input	3.62	8.61	5.95
24	Green (G) signal input	3.63	8.61	5.95
25	Blue (B) signal input	3.61	8.61	5.95
26	Selectable primary color signal input control	0.07	0.99	0.99
27	Luminance signal input	2.54	6.84	5.83
28	Luminance signal output	2.54	6.91	5.92
29	B–Y color difference signal output	2.35	6.89	5.9
30	R–Y color difference signal output	2.35	6.9	5.9
31	B–Y color difference signal input	2.36	6.8	5.93

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

32	R–Y color difference signal input	2.35	6.84	5.93
33	Sub–carrier output for SECAM demodulation	4.23	6.68	5.82
34	3.58MHz crystal oscillator	2.56	7.87	5.91
35	4.43MHz crystal oscillator	2.56	7.87	5.91
36	APC low pass filter	4.95	8.75	5.9
37	Horizontal starting supply voltage	8.22	2.09	2.09
38	Composite video output	2.54	7.32	5.96
39	Black level stretch	4.86	8.68	4.69
40	Line drive pulse output	0.38	2.82	2.81
41	Horizontal flyback pulse input/sandcastle pulse output	0.74	8.81	5.75
42	Line discriminator	3.33	8.44	5.87
43	Line discriminator	3.89	8.75	5.87
44	Ground	0.00	0.00	0.00
45	Vertical frequency parabola output	0.14	8.83	5.89
46	Field drive signal output	2.3	8.8	5.82
47	Field drive signal output	2.34	8.8	5.8
48	IF signal input	4.55	8.23	6.05
49	IF signal input	4.55	8.21	6.05
50	High voltage detection input	2.01	7.68	5.95
51	Vertical sawtooth generation	3.72	8.35	5.91
52	Vertical reference bias setting	3.83	8.33	5.96
53	AGC filter for IF amplifier	4.44	8.72	5.89
54	AGC output for IF amplifier	1.31	10.13	5.69
55	Audio deemphasis	2.86	8.5	5.87
56	Audio decoupling	3.57	8.78	5.89

Table 5 Functions and Service Data of TDA8350Q–N6 (N401)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Vertical drive input (positive)	2.33	8.82	5.8
2	Vertical drive input (negative)	2.28	8.83	5.83
3	Feedback input	8.52	5.74	4.71
4	Supply voltage	17.23	7.92	4.2
5	Output 1	8.5	5.83	4.71
6	Not connected	0.00	∞	∞
7	Ground	0.00	0.00	0.00
8	Pump supply voltage input	49.31	∞	∞
9	Output 2	0.00	5.87	4.7
10	Guard output	0.2	8.64	5.88
11	Pincushion output	0.07	9.79	5.24
12	Pincushion input (negative)	2.43	∞	6.97
13	Pincushion input (positive)	2.91	∞	6.88

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Table 6 Functions and Service Data of TDA7057AQ (N601)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Volume control input	0.95	6.85	6.15
2	Not connected	0.00	∞	∞
3	Audio R signal input	2.38	12.59	6.51
4	Supply voltage	17.48	0.47	0.47
5	Audio L signal input	2.37	12.5	6.51
6	Ground	0.00	0.00	0.00
7	Volume control input	0.95	6.85	0.15
8	Left channel in-phase signal output	8.16	6.46	5.59
9	Ground	0.00	0.00	0.00
10	Left channel inverting signal output	8.25	6.46	5.59
11	Right channel inverting signal output	8.24	6.46	5.59
12	Ground	0.00	0.00	0.00
13	Right channel in-phase signal output	8.13	6.46	5.59

Table 7 Functions and Service Data of TDA6107Q´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	G inverting input	3.33	5.32	4.72
2	R inverting input	3.26	5.32	4.72
3	B inverting input	3.28	5.32	4.72
4	Ground	0.00	0.00	0.00
5	Black level current input	6.03	18.65	5.65
6	Supply voltage	199	∞	4.48
7	B output	69.9	∞	5.45
8	R output	69.18	∞	5.45
9	G output	65.9	∞	5.45

Table 8 Functions and Service Data of HEF4053BP (ND01)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Signal input terminal	0.00	7.08	6.32
2	Signal input terminal	2.36	6.91	5.89
3	Signal input terminal	0.16	7.08	6.4
4	Signal output terminal	2.55	6.84	5.83
5	Signal input terminal	2.55	6.91	5.91
6	Ground	0.00	0.00	0.00
7	Ground	0.00	0.00	0.00
8	Ground	0.00	0.00	0.00
9	Control signal input terminal	0.15	5.97	4.93
10	Control signal input terminal	0.15	5.97	4.93
11	Control signal input terminal	0.15	5.97	4.93

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

12	Signal input terminal	2.36	6.9	5.9
13	Signal output terminal	0.00	7.03	6.38
14	Signal input terminal	2.36	6.8	5.9
15	Audio output	2.36	6.84	5.94
16	Supply voltage	8.32	1.57	1.57

Table 9 Functions and Service Data of MSP3440 (N606M)´s Pins

Pin No.	Function Description		Digital Multimeter		
			Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	TP	NC	0.00	15.32	5.3
2	AVD-GL-OUT	NC	2.57	13.41	5.51
3	D-CTR-I/O-1	NC	0.00	15.32	5.57
4	D-CTR-I/O-0	NC	0.00	15.32	5.58
5	ADR-SEL		5.03	8.62	4.54
6	STANDBYQ		5.03	8.63	4.54
7	I2C-CL		3.8	6.98	4.44
8	I2C-DA		3.9	6.98	4.44
9	I2S-CL	NC	2.5	15.32	6.24
10	I2S-WS	NC	2.82	15.32	6.24
11	I2C-DA-WT	NC	2.5	15.32	6.24
12	I2S-DA-IN1	NC	0.27	15.32	5.29
13	ADR-DA	NC	0.2	15.32	5.59
14	ADR-WS	NC	0.1	15.32	5.59
15	ADR-CL	NC	0.1	15.32	5.59
16	DVSVP		5.04	8.6	4.54
17	DVSS		0.00	0.00	0.00
18	I2S-DA-IN2	NC	0.00	15.32	5.31
19	NC		0.00	∞	∞
20	RESETQ		5	15.04	5.24
21	DACA-R	NC	0.00	3.54	3.54
22	DACA-L	NC	0.00	3.52	3.52
23	VREF-I		0.00	0.00	0.00
24	DACM-R		2.03	3.52	3.52
25	DACM-L		2.04	3.54	3.54
26	DACM-SVB	NC	1.41	3.6	3.6
27	SC2-OUT-R	NC	3.81	13.8	5.92
28	SC2-OUT-L	NC	3.79	13.8	5.91
29	CREF 1		0.00	0.00	0.00
30	SC1-OVT-R		3.8	12.8	5.91
31	SC1-OUT-L		3.79	12.8	5.92
32	SAPL-A		7.28	∞	6.04
33	AHVSUP		8.26	∞	4.59
34	CAPL-M		6.53	∞	6.04
35	AHVSS		0.00	0.00	0.00
36	ABNDC		3.74	∞	6.02
37	SC3-ZN-L	NC	3.77	∞	6.1
38	SC3-IN-R	NC	3.77	∞	6.1

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

39	SC2–IN–L	NC	3.77	∞	6.1
40	SC2–IN–R	NC	3.77	∞	6.1
41	SC1–IN–L		3.77	∞	6.1
42	SC1–IN–R		3.77	∞	6.1
43	VREFTOP		2.61	1.63	1.63
44	WONO–IN	NC	3.77	19.42	6.1
45	AVSS		0	0.00	0.00
46	AVSVP		5.13	8.62	4.53
47	ANA–IN1+		1.52	15.3	5.27
48	ANA–IN1–		1.52	15.3	5.26
49	ANA–IN2+		0.00	15.3	5.27
50	TESTEN		0.00	0.00	0.00
51	XTAL–2N		2.49	14.79	5.27
52	XTAL–OUT		2.49	14.63	5.3

Table 10 Functions and Service Data of TDA9808T (NQ102)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	PIF signal input 1	3.2	7.46	6.03
2	PIF signal input 2	3.2	7.46	5.99
3	RFAGC start–control level adjust	0.96	6.82	5.85
4	PLL APC filter	2.47	8.32	6.3
5	Audio AGC filter	2.77	8.08	6.17
6	Audio output (NTSC 4.5MHz)	2.36	7.46	5.86
7	Filter	1.78	8.25	6.29
8	1/2VCC comparison voltage bias	0.00	∞	∞
9	Video output	2.61	7.89	6.09
10	Second SIF signal output	2.01	8.03	6.17
11	Second SIF signal input	2.79	5.2	4.99
12	RFAGC output	0.04	∞	6.1
13	AGC signal output	3.99	8.25	6.2
14	External connection for VCO oscillating LC network	2.74	7.25	6
15	External connection for VCO oscillating LC network	2.74	7.25	6
16	Ground	0.00	0.00	0.00
17	AGC filter	2.74	8.3	6.11
18	Supply voltage input terminal	8.57	2.79	2.7
19	SIF signal input	3.17	7.2	6.27
20	SIF signal input	3.17	7.2	6.27

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Table 11 Functions and Service Data of TA1219AN (DS01)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	DET 2N NC	6.54	7.88	5.77
2	DET SLCT NC	3.69	7.99	5.73
3	L TV	5.12	7.49	5.89
4	R TV	5.11	7.55	5.91
5	V TV	5.13	7.52	5.89
6	L V1	5.12	7.63	5.89
7	R V1	5.12	7.63	5.89
8	V L1	5.13	7.52	5.89
9	L S1	5.12	7.64	5.89
10	S S1	5.09	7.5	5.89
11	R S1	5.1	7.64	5.88
12	C S1	0.00	0.00	0.00
13	L S2	5.08	7.64	5.87
14	S S2	5.13	7.62	5.87
15	R S2	5.11	7.62	5.86
16	C S2	5.12	7.66	5.64
17	I/01 NC	7.3	7.98	5.43
18	I/02	0.02	7.9	5.44
19	GND	0.00	0.00	0.00
20	SCL	3.5	6.98	4.47
21	SDA	3.77	6.98	4.46
22	SYNC OUP NC	0.02	7.88	5.45
23	ADRS	0.00	0.00	0.00
24	V V2 NC	5.11	7.53	5.81
25	L V2 NC	5.1	7.64	5.82
26	Y IN NC	5.1	7.76	5.82
27	R V2 NC	5.1	7.64	5.82
28	C IN NC	5.09	7.76	5.6
29	VCC	8.86	5.45	4.1
30	C OVT1	3.46	0.2	0.2
31	R OVT1	3.95	7.43	5.46
32	Y OVT1	3.48	0.2	0.2
33	L OVT1	3.96	7.43	5.46
34	V OVT1	4.06	0.2	0.2
35	R OVT TV NC	3.95	7.39	5.48
36	L OUT TV NC	3.95	7.46	5.48

Table 12 Functions and Service Data of TC90A13N (NK02)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	VRETL	1.46	0.42	0.42
2	VSS1	0	∞	∞
3	VDD1	4.85	0.91	0.91
4	VREFH	3.4	0.79	0.78

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

5	ADZN	2.16	6.84	5.79
6	BIAS1	1.44	6.85	5.91
7	CLAMPC	3.21	6.85	5.92
8	TT2ST1	0.00	0.00	0.00
9	1/2VDD	2.44	5.18	4.73
10	VFIL	1.57	6.87	5.92
11	CKIN	2.21	6.85	5.92
12	VDD2	4.86	0.91	0.91
13	VSS2	0.00	0.00	0.00
14	KILLER	0.06	6.63	5.45
15	CBPF	0.00	0.00	0.00
16	VENHO	0.00	0.00	0.00
17	VENH1	0.00	0.00	0.00
18	1L L2NE	4.85	0.91	0.91
19	CORING	0.00	0.00	0.00
20	VDD3	4.85	0.91	0.91
21	VSS3	0.00	0.00	0.00
22	BIAS3	3.45	6.8	5.91
23	COUT	3.85	1.39	1.39
24	BIAS2	1.73	6.84	5.92
25	YOUT	3.59	1.39	1.39
26	VREF1	2.8	5.18	4.89
27	VDD4	4.86	0.91	0.91
28	VSS4	0.00	0.00	0.00

Table 13 Functions and Service Data of MM1031x5 (NK03)´s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	VCC	1.78	7.2	5.6
2	IN	0.00	0.00	0.00
3	MC NC	0.00	∞	∞
4	GND	2.24	6.87	5.93
5	OUT	4.86	0.91	0.91

Table 14 Each Electrode Voltage of Key Triodes

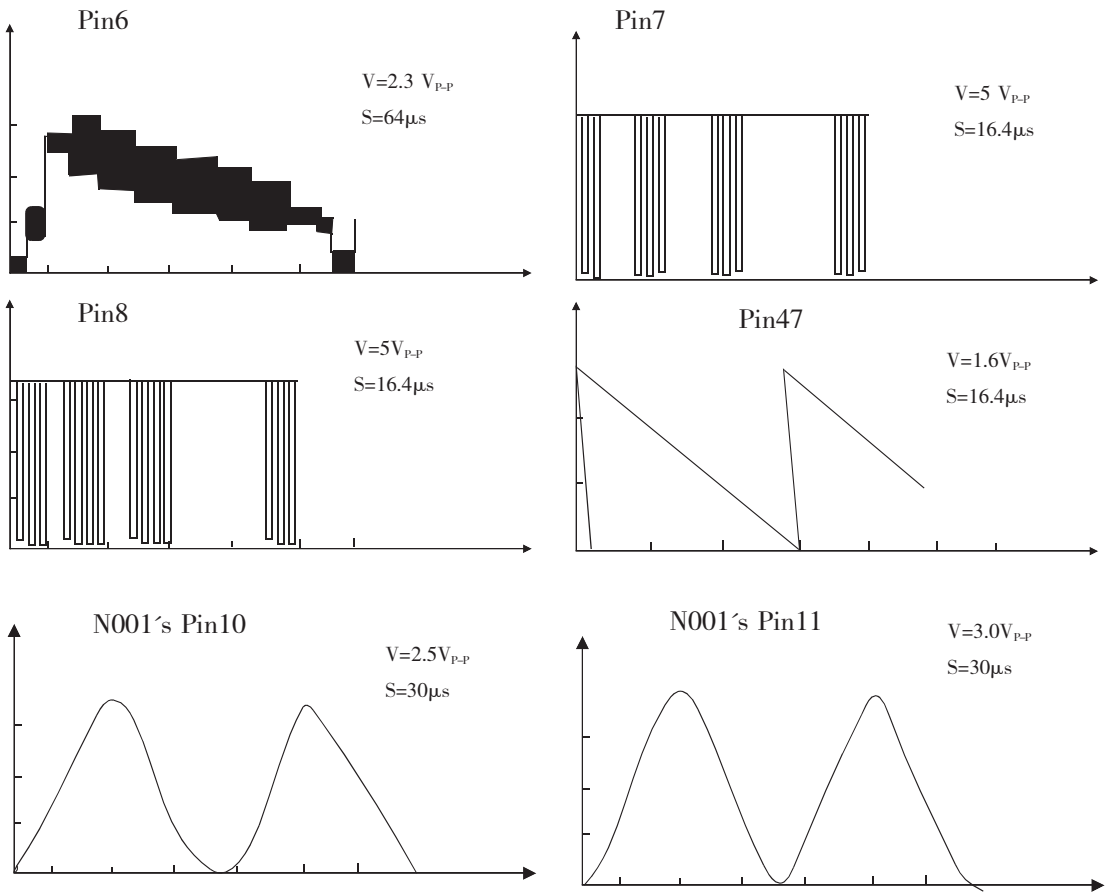
Description		DC Voltage(V)		
Serial No.	Parts	Base	Collector	Emitter
V001	C1851Y	0.01	4.71	0.01
V002	C1851Y	0.08	4.21	0.01
V217	C1815	4.22	7.96	3.54
V609	C1815	2.69	8.25	2.01
V204	C1815	1.82	5.17	1.16
V104	C388A	2.04	8.13	1.28

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

V227	C1851Y	2.53	8.25	1.9
V432	BSN274	0.55	26.74	0.01
V433	BU2720DF	0.03	113.94	0.00
V631A	C1851Y	0.2	0.95	0.00
V632A	C1851Y	8.32	0.1	8.1
VQ001	C1851Y	3.38	12.8	2.74
VQ002	2SA2878	0.73	0.04	0.04
VQ005	2SA2878	0.03	0.03	0.03
VQ019	2SA1837	1	59.52	110
VQ020	2SC4793	0.8	59.52	0.2
V513	2SC4423	–0.45	141.61	0
V512	2SC3807	0	–0.45	–0.76
V511	2SA1015	8.1	–0.76	8.57
V851	C1851Y	5.89	11.94	5.36
N861	C1851Y	11.94	7.08	8.32
N402	C1851Y	16.86	7.05	8.3

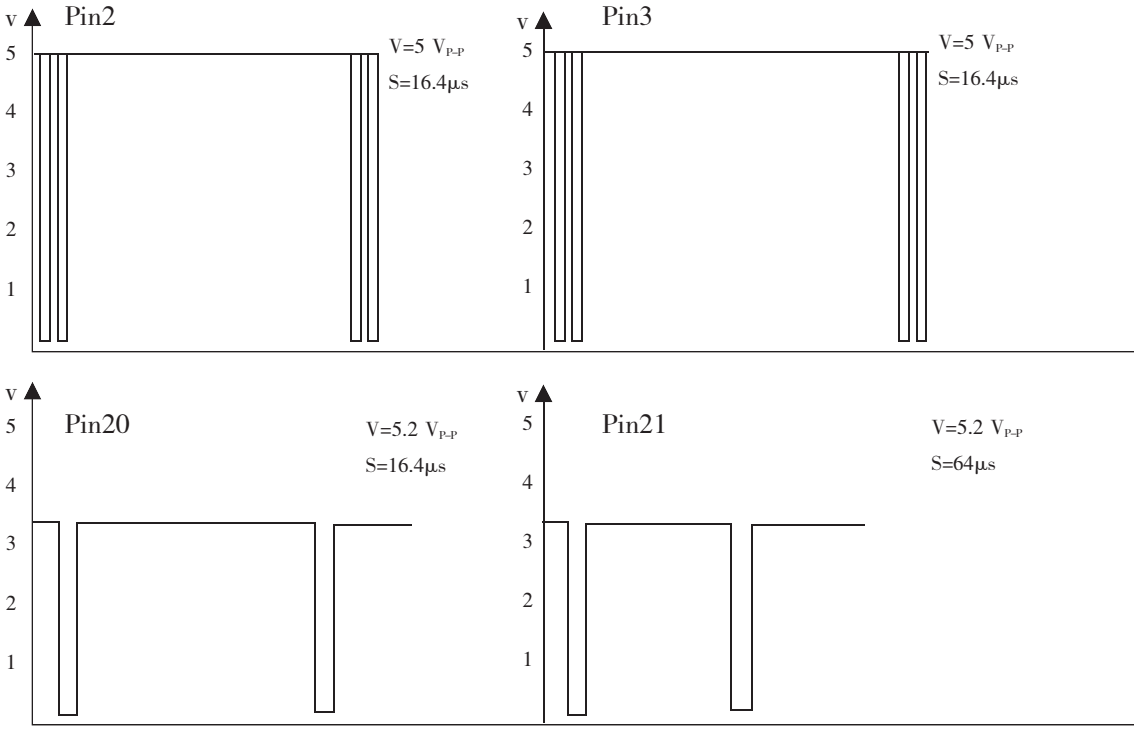
OM8839PS(N301)´s Pin6, Pin7, Pin8, Pin47



IC DATA AND WAVEFORMS OF KEY POINTS (continued)

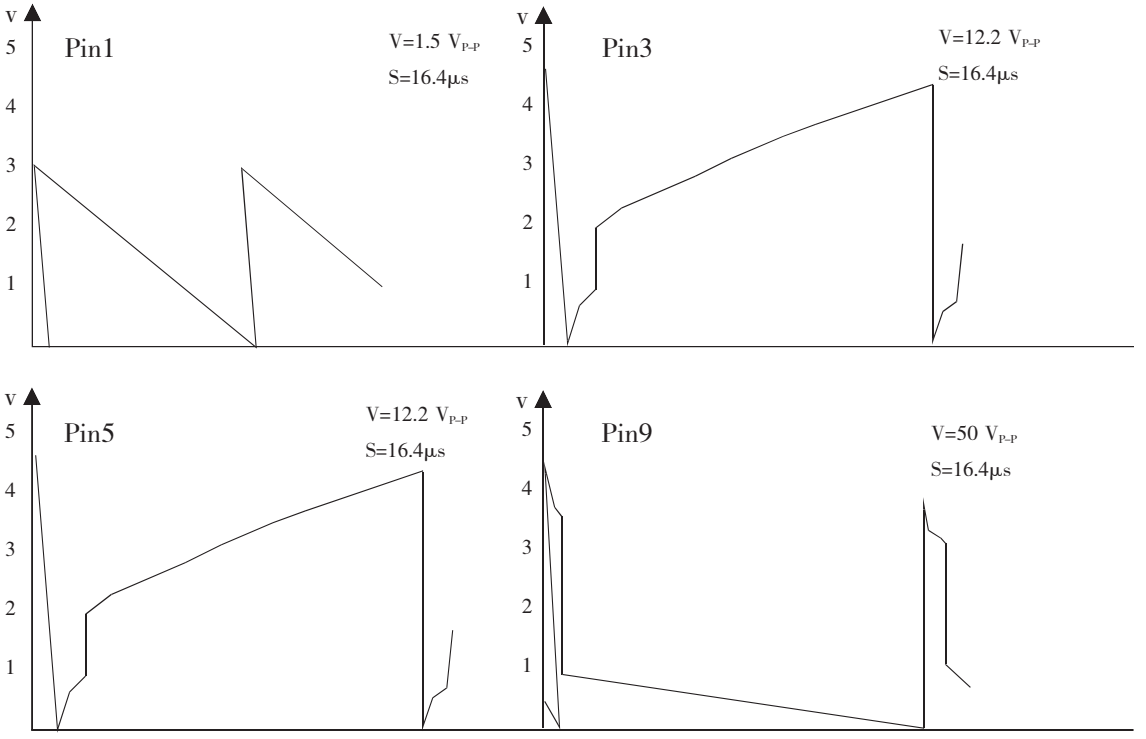
LC86F3248AU–DIP (N001)´s

Pin2, Pin3, Pin10, Pin11, Pin20, Pin21



TDA8350Q(N401)´s

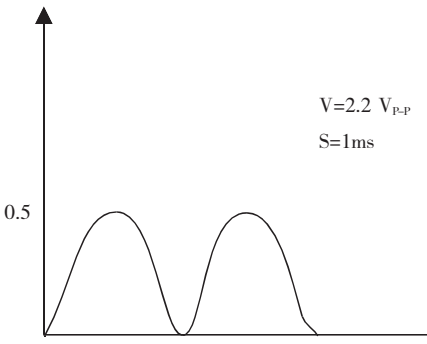
Pin1, Pin3, Pin5, Pin9



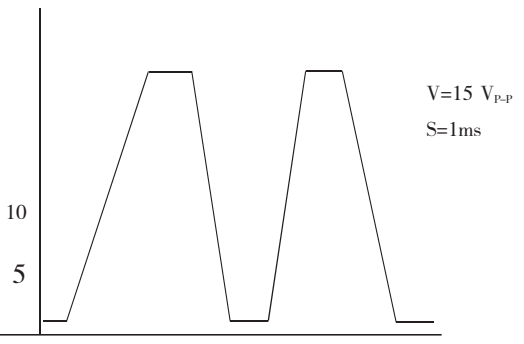
IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA7057AQ:

Pin3, Pin5



Pin8, Pin10, Pin13



Measure with a GOS-622G oscilloscope.

CIRCUIT ADJUSTMENTS

1. General Description

All adjustments are thoroughly checked and corrected before the TV outgoing. Therefore the TV should operate normally and deliver proper colour pictures upon installation. However, several minor adjustments may be required depending on the particular location where the TV is operated. This TV is shipped completely in carton. Carefully take out the TV from the carton and remove all packing materials. Connect the power cord into a 120V AC, 60Hz two-pin power outlet. Turn on the TV. Check and adjust all the customer controls such as brightness, contrast and colour to obtain natural colour pictures.

2. Automatic Degaussing

A degaussing coil is mounted around the CRT so that external degaussing after moving the TV is generally unnecessary, providing it is properly degaussed upon installation. The degaussing coil operates in about 1 second after power on. If the set is moved or faced to a different direction, the power switch must be switched off for at least 30 minutes in order that the automatic degaussing circuit operates properly. Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external-degaussing coil. Slowly move the degaussing coil around the screen, the sides and front of the TV and slowly withdraw the coil to a distance of about 2m before unplug it. If colour shading still exists, perform the Colour Purity Adjustment and Convergence Adjustment procedures.

3. Supply Voltage Adjustment

Caution: +B voltage has close relation to high voltage. To avoid X-ray radiation, +B voltage should be +115V.

1) Set AC power supply to 120±2V.
2) Connect a digital voltmeter to two pins of C561, and then turn on the TV.
3) Receive Philips test pattern signals.
4) The voltmeter should read 115±0.5V.

4. High Voltage Inspection

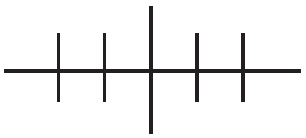
Caution: No high voltage adjustment should be done in the chassis.

1) Connect a precise high voltmeter to the second anode of the CRT.
2) Turn on the TV and set the brightness and contrast to minimum (i.e. set beam current of the CRT to zero).
3) The high voltage tested should be 26.5±1KV.
4) Set the brightness to minimum or maximum, and ensure high voltage not beyond limitation of 29KV in any case.

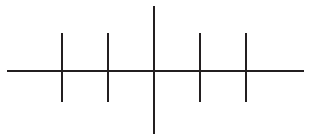
5. Focus Adjustment

1) Use the remote control to set the contrast to maximum and the brightness, chroma to medium.
2) Set H. V. lines near Philips pattern center to thinnest with the FCB on the FBT. After finishing adjustment, ensure that no poor focusing exists near the center or around of the frame.

CIRCUIT ADJUSTMENTS (continued)



Before Adjusting



After Adjusting

SET–UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new CRT is installed. Perform the adjustments in order as follows.

1. Colour purity
2. Convergence
3. White Balance

Note:

The purity/convergence magnet assembly and rubber wedges need mechanical positioning. Refer to Fig. 17.

1. Colour Purity Adjustment

Note:

Before attempting any purity adjustment, the TV should be operated for at least 15 minutes.

1) Demagnetize the CRT and cabinet using a degaussing coil.
2) Set the brightness and contrast to maximum.
3) Receive the green raster test signals.
4) Loosen the clamp screw holding the deflection yoke and slide it backward or forward to display vertical green belt (zone) on the screen.
5) Remove the rubber wedge.
6) Rotate and spread the tabs of the purity magnet around the neck of the CRT until the green belt is on the centre of the screen.
7) Slowly move the deflection yoke forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8) Check purity of the red and blue raster.

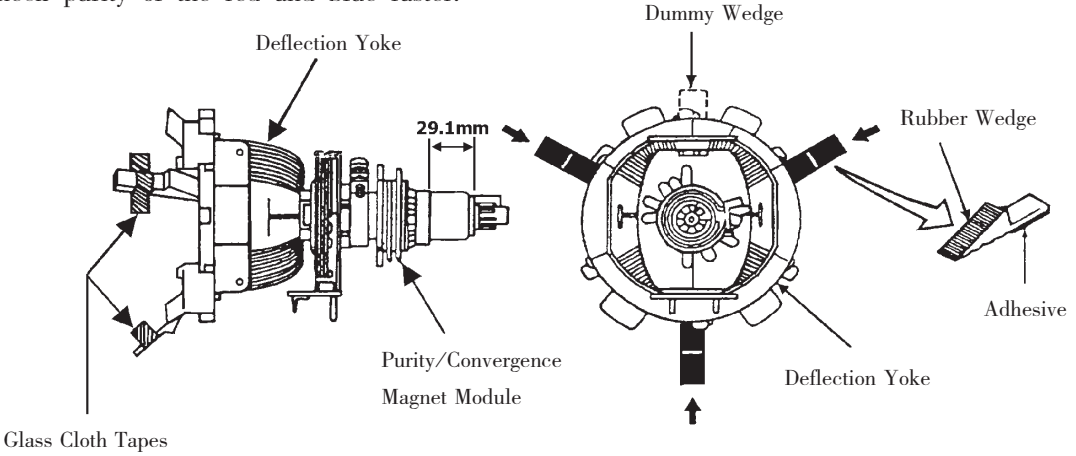
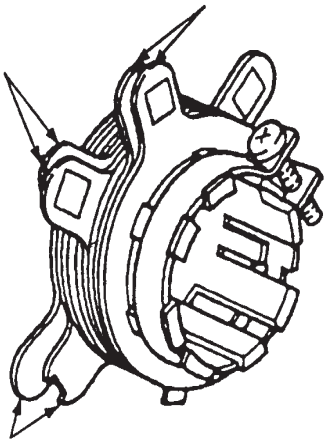
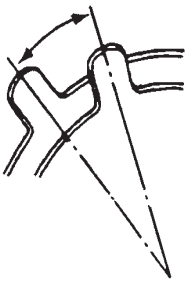
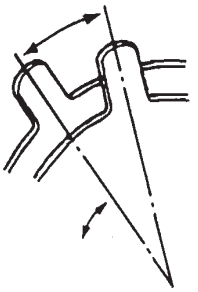


Fig. 17

SET–UP ADJUSTMENTS (continued)







2. Convergence Adjustment

Note:

Before attempting any convergence adjustment, the TV should be operated for at least 15 minutes.

• Center convergence adjustment

1) Receive the grille test pattern signals.
2) Set the brightness and contrast properly.
3) Adjust two tabs of the 4–pole magnet to change the angle between them and red and blue vertical lines are superimposed on the center area of the screen.
4) Turn both tabs at the same time keeping the angle constant to superimpose red and blue horizontal lines on the center of the screen.
5) Adjust two tabs of 6–pole magnet to superimpose red/blue line and green line. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6) Repeat steps 3)~5) keeping in mind red, green and blue movement. 4–pole magnet and 6–pole magnet interact each other, resulting in complicating and dot movement.

• Circumference convergence adjustment

1) Loosen the clamping screw of the defection yoke slightly to allow it to tilt.
2) Temporarily put a wedge as shown in Fig. 17. (Do not remove cover paper on adhesive part of the wedge.)
3) Tilt front of the deflection yoke up or down to obtain better convergence in circumference.
Push the mounted wedge into the space between the CRT and yoke to fix the yoke temporarily.
4) Put other wedge into bottom space and remove the cover paper to stick.
5) Tilt front of the deflection yoke right or left to obtain better convergence in circumference.
6) Keep the deflection yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on the CRT to fix the yoke.
7) Detach the temporarily mounted wedge and put it in another upper space. Stick it on the CRT to fix the yoke.
8) After fixing three wedges, recheck overall convergence.
Tighten the screw firmly to fix the yoke and check if the yoke is fixed.

SET–UP ADJUSTMENTS (continued)

9) Stick three adhesive tapes on wedges as shown in Fig. 17.

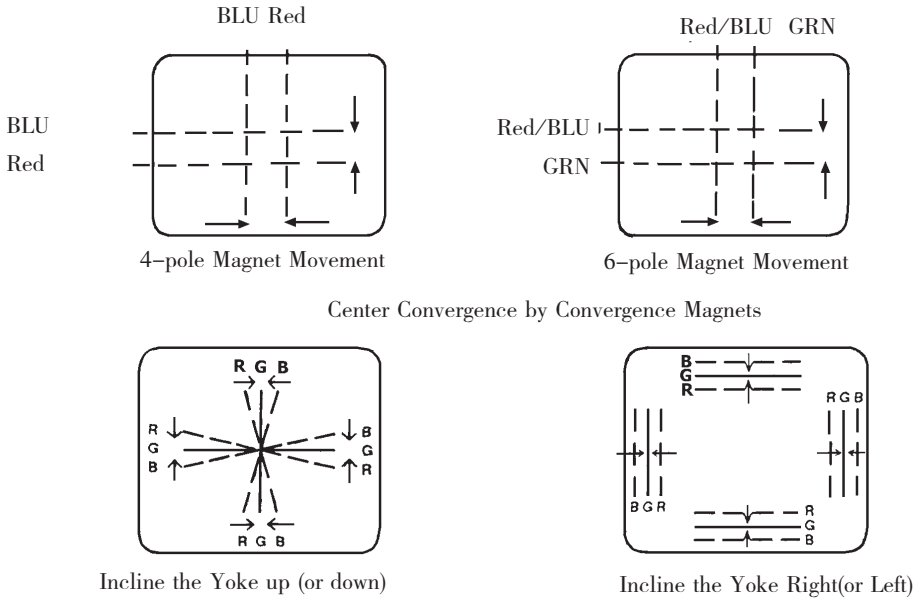


Fig. 19

SERVICE MODE AND BUS DATA

1. To Enter the Service Mode

1) Decrease the volume to 0 with the remote control.
2) Press the MUTE button on the remote control and VIDEO button on the TV at the same time. “S” appears on the TV screen and the TV enters the Service mode.
3) Press the ↓, ↑, ← or → button to adjust data.
4) Press the ⏻ button on the remote control to exit from the mode.

SERVICE MODE AND BUS DATA (continued)

2. Bus Data

MENU.00	
AFW: 240KHZ	1
IF–PLL	1
AFA: Inside	1
AFB: Below	0
AGC	Set to the optimal mode
IFS	0
MOD	0
MENU. 01	
FLXED AUDIO	1
SOUND MUTE	0
AUTO AUDIO LIMIT	0
VOLUME	12
MENU. 02	
BLANK HOB	0
De interla	0
H shift	Set to the optimal mode
H shift–50	32
E/W WIDE	41
PARABOLA	27
E/W CORNER	39
TRAPEZIUM	40
OSD H.POS	Set to the optimal mode
MENU. 03	
VER MODE	0
VER OUT	0
OVERSCAN	1
VER Protec	0
BLANK FIX	0
V Divider	0
MENU. 04	
V CENTER	Set to the optimal mode
V AMP	Set to the optimal mode
S CORRECT	Set to the optimal mode
V SHIFT	Set to the optimal mode
VSHIFT–50	32
V ZOOM	25
V SCROLL	31
V HALF	0

SERVICE MODE AND BUS DATA (continued)

MENU. 05	
WHIT P RED	31
WHIT P GRE	Set to the optimal mode
WHIT P BLU	Set to the optimal mode
AKB	0
Y–DELAY	1
CATHOD LEV	5
MEUN. 06	
BLUE Stret	1
BLACK Stret	1
Y–VALUE	0
SKIN ANGLE	1
SKIN TONE	1
B.B LEVEL	40
MENU. 07	
ACL	1
CB	1
CMB	0
BPS	0
MAT	0
OPT. AV3CH	1 (PF2025)
	0 (GT2011J)
OPT. AVC	1
OPT. VM	1 (PF2025)
	0 (GT2011J)
OPT. DCOM	1 (PF2025)
	0 (GT2011J)
OPT. BBK	1
MENU. 08	
SUB BRIGHT	31
LOUNDNESS	9
CNTRST MAX	63
CNTRST MID	32
CNTRST MIN	0
COLOR Corer	32
SUB TINT	28
MENU. 09	
BCO	1
XA. XB	1
STB	1
POC	0
CM2.1.0	3

SERVICE MODE AND BUS DATA (continued)

MENU. 10	
VIM	1
STM	0
HCO	1
EVG	0
PRD	1
COR	1
MENU. 11	
OSO	1
CS1. CS0	0
BB	1
AST	1
FFI	0
EBS	1
ECO	0
MENU. 12	
OPT. OVPT	1
OPT. AV3	1
OPT. AV4	0
OPT. COLOR	0
OPT. V-CHIP	1
OPT. CCD	1
OPT. PWR-ON	1 (PF2025) 0 (GT2011J)
SRCH SPEED	0
ROM CORREC	0
MSP/YCbCr	1 (PF2025) 0 (GT2011J)

Notes:

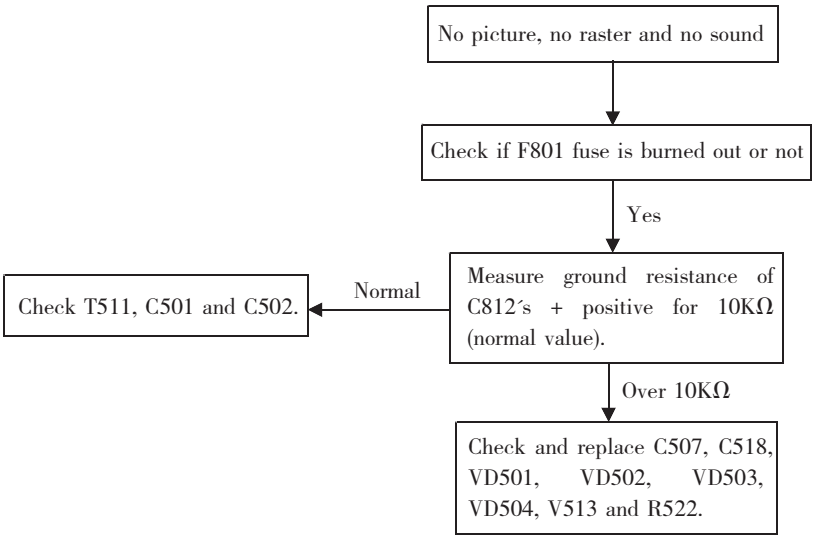
① The data sheet may differ dependent on different models.

② The data sheet may differ dependent on different CRTs for the same model.

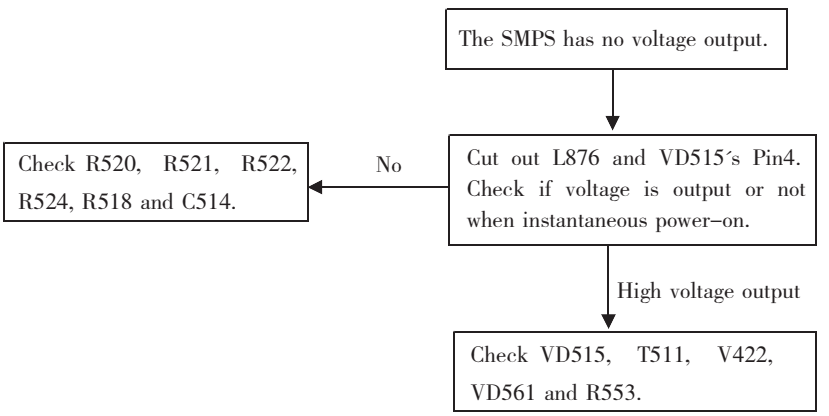
TROUBLESHOOTING FLOW CHARTS

1. Power On/Off

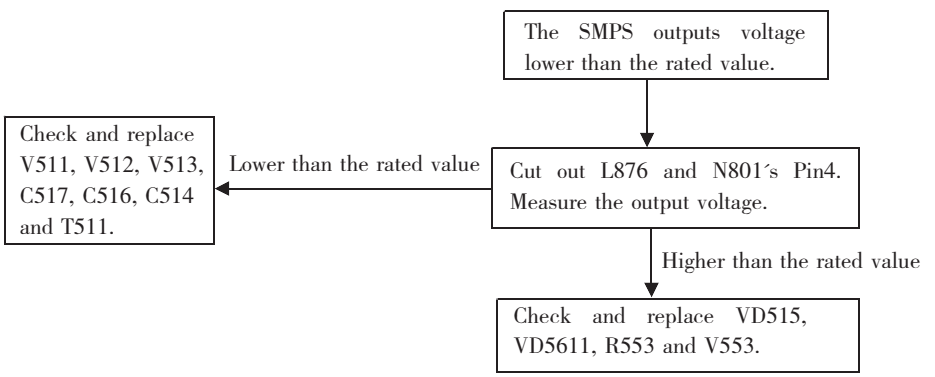
1.1 No picture, no raster and no sound



1.2 The SMPS has no voltage output.

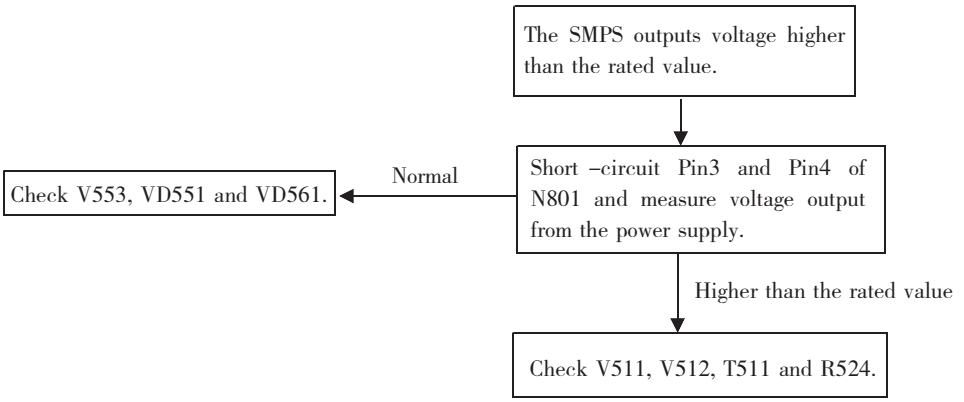


1.3 The SMPS outputs voltage lower than the rated value.

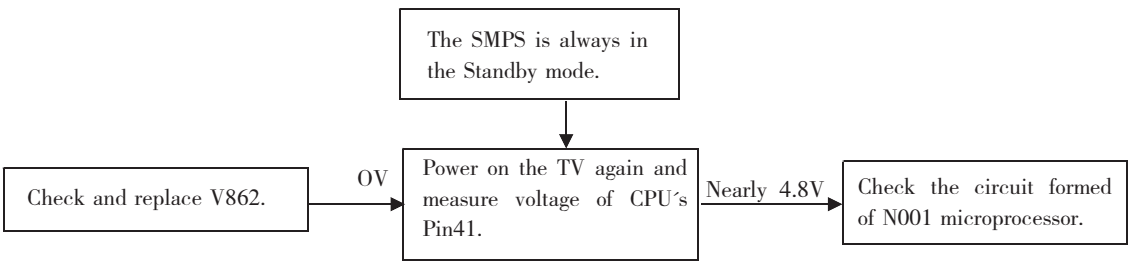


TROUBLESHOOTING FLOW CHARTS (continued)

1.4 The SMPS outputs voltage higher than the rated value.

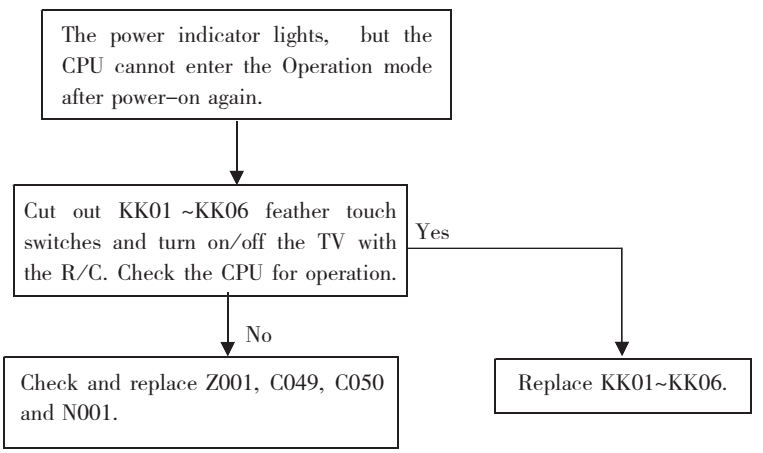


1.5 The power indicator lights, but the SMPS is still in the Standby mode.



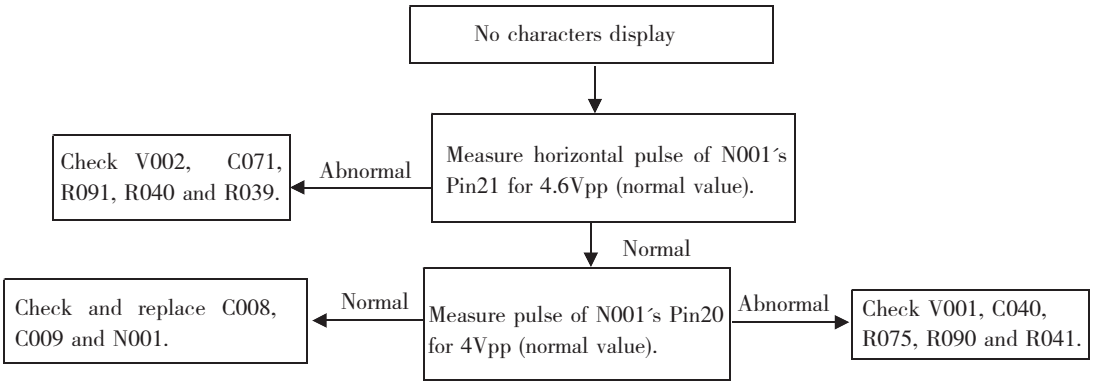
2. Control System

2.1 The power indicator lights, but the CPU cannot enter the Operation mode after power–on again.

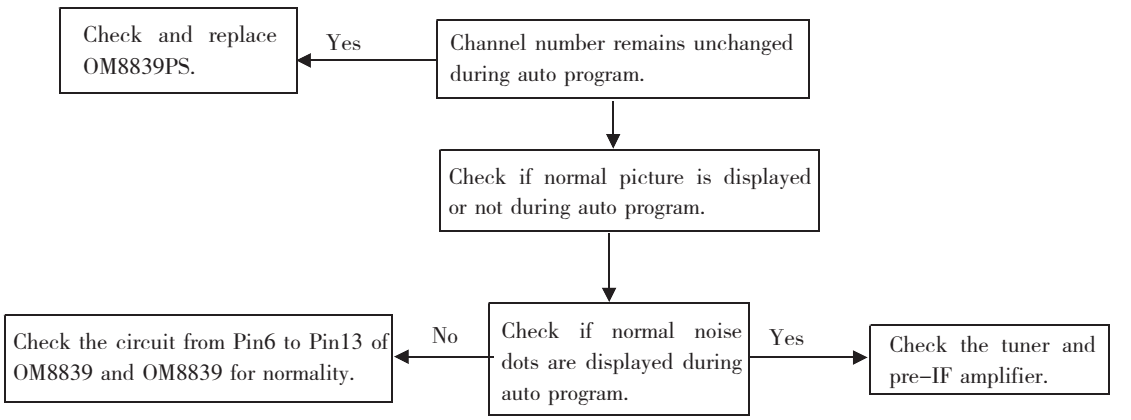


TROUBLESHOOTING FLOW CHARTS (continued)

2.2 No characters display

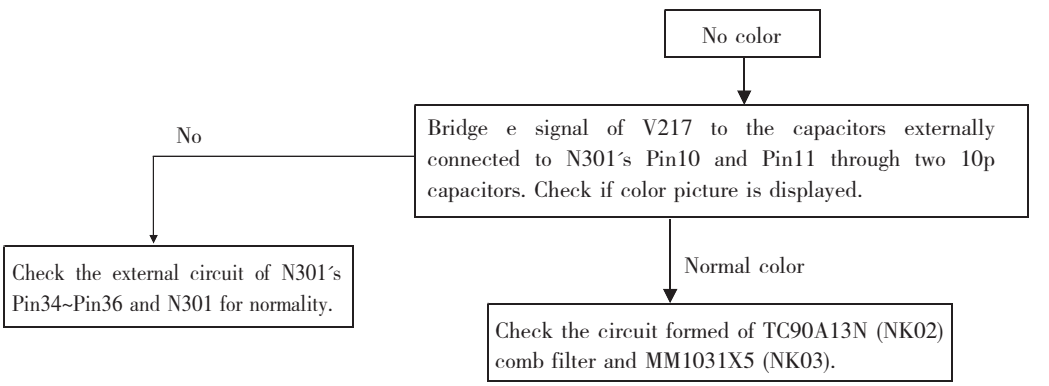


2.3 Channel number remains unchanged during auto program.



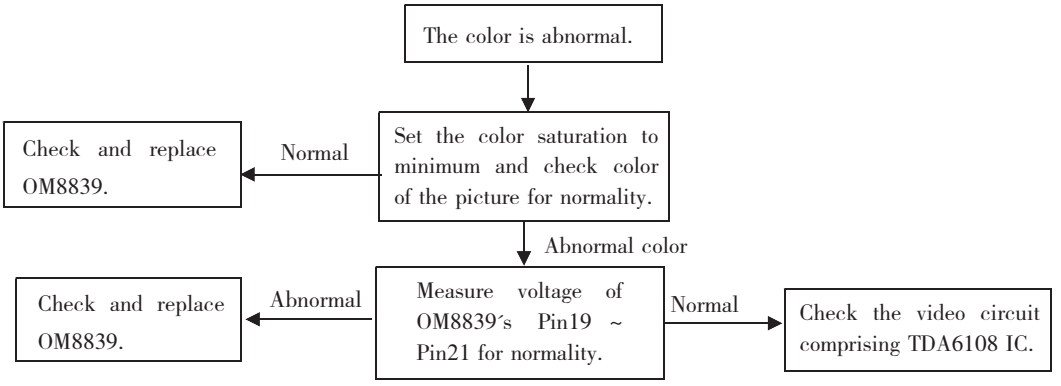
3. Video Signal Processor

3.1 No color



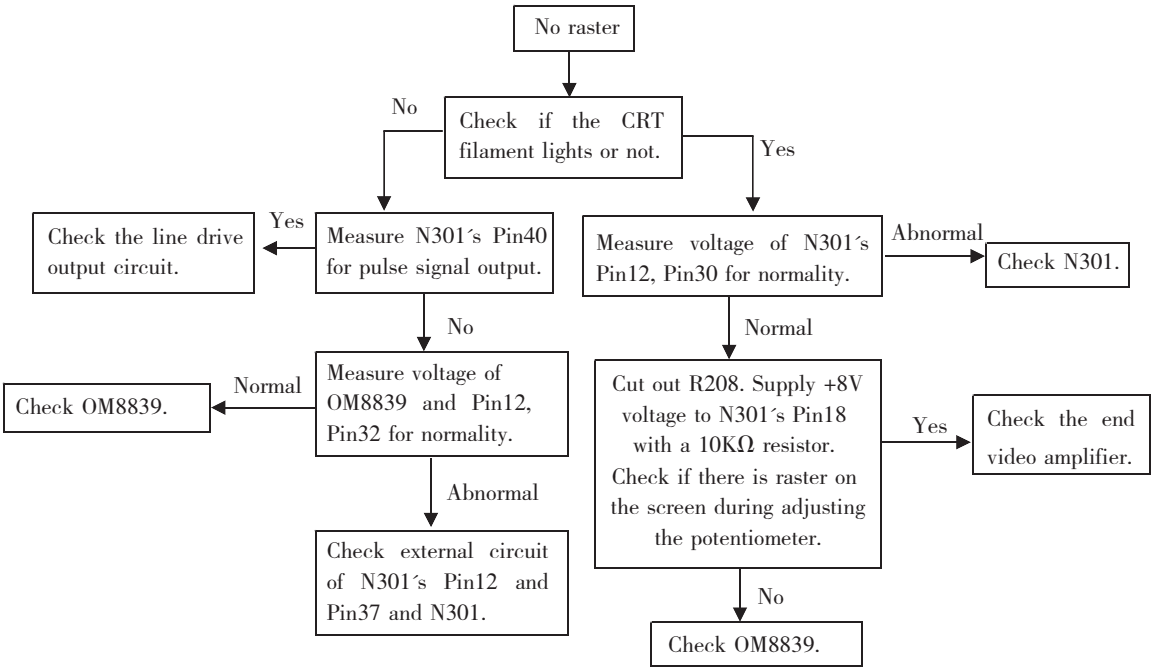
TROUBLESHOOTING FLOW CHARTS (continued)

3.2 The color is abnormal.



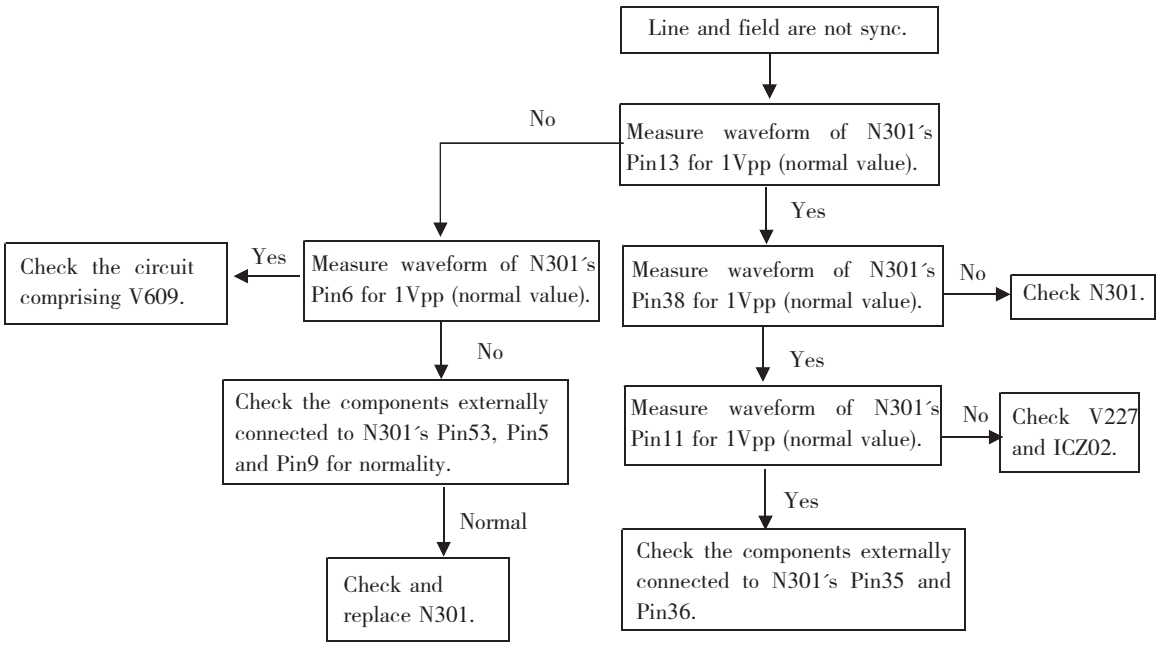
4. Horizontal/Vertical Scan Circuit

4.1 No raster

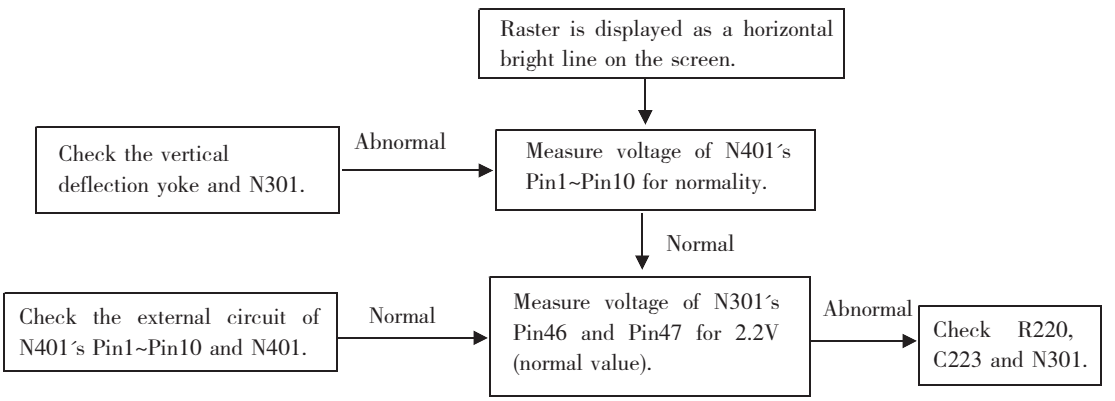


TROUBLESHOOTING FLOW CHARTS (continued)

4.2 Line and field are not sync.

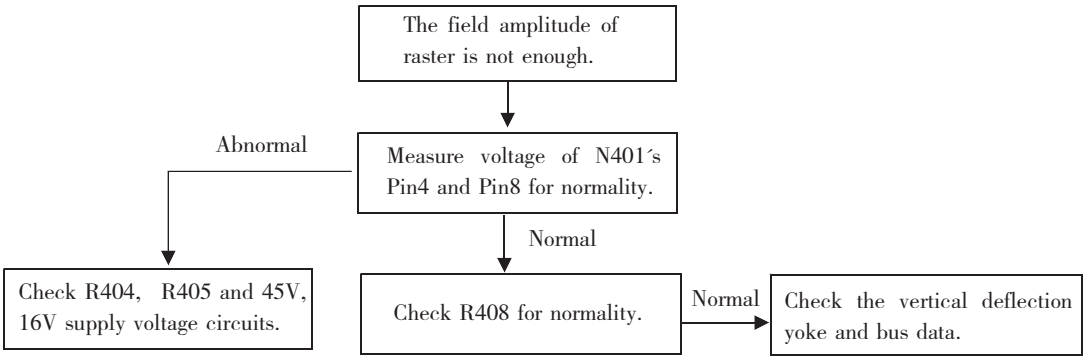


4.3 Raster is displayed as a horizontal bright line on the screen.

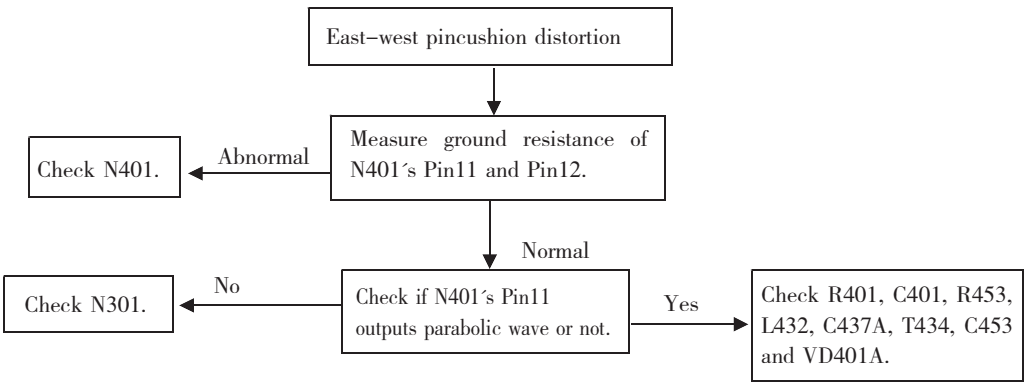


TROUBLESHOOTING FLOW CHARTS (continued)

4.4 The field amplitude of raster is not enough.

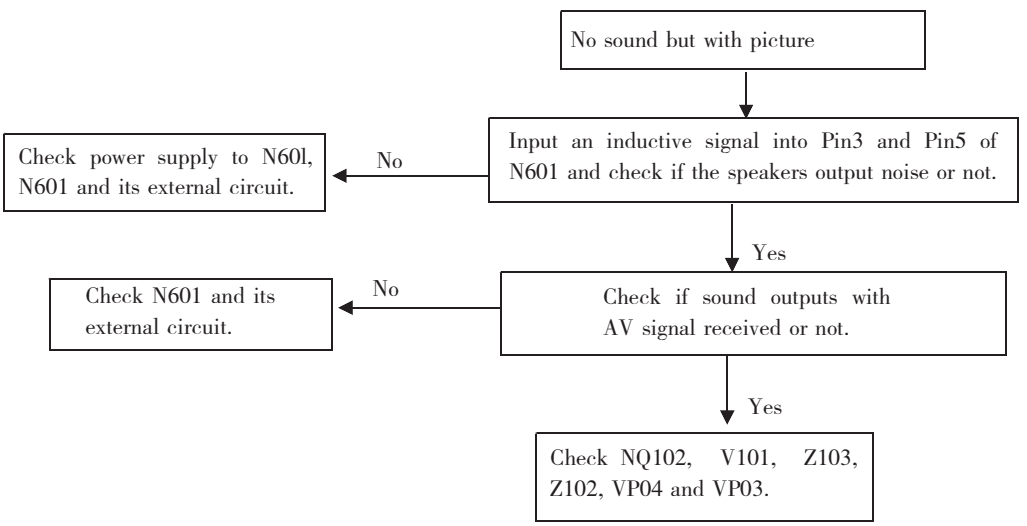


4.5 East–west pincushion distortion



5. Audio System

5.1 No sound



PARTS LIST

Position	Parts	Type
		Type
		Parts on Main PCB
R618	Carbon film resistor	RT13–0.166W–4.7ΩJ
R101	Carbon film resistor	RT13–0.166W–10ΩJ
R519	Carbon film resistor	RT13–0.166W–22ΩJ
R139	Carbon film resistor	RT13–0.166W–47ΩJ
R240A	Carbon film resistor	RT13–0.166W–47ΩJ
R401	Carbon film resistor	RT13–0.166W–47ΩJ
R402	Carbon film resistor	RT13–0.166W–47ΩJ
R109	Carbon film resistor	RT13–0.166W–47ΩJ
R240	Carbon film resistor	RT13–0.166W–47ΩJ
R104	Carbon film resistor	RT13–0.166W–82ΩJ
R003	Carbon film resistor	RT13–0.166W–100ΩJ
R006B	Carbon film resistor	RT13–0.166W–100ΩJ
R023	Carbon film resistor	RT13–0.166W–100ΩJ
R032	Carbon film resistor	RT13–0.166W–100ΩJ
R056	Carbon film resistor	RT13–0.166W–100ΩJ
R060	Carbon film resistor	RT13–0.166W–100ΩJ
R061	Carbon film resistor	RT13–0.166W–100ΩJ
R065	Carbon film resistor	RT13–0.166W–100ΩJ
R067	Carbon film resistor	RT13–0.166W–100ΩJ
R068	Carbon film resistor	RT13–0.166W–100ΩJ
R105	Carbon film resistor	RT13–0.166W–100ΩJ
R202	Carbon film resistor	RT13–0.166W–100ΩJ
R203	Carbon film resistor	RT13–0.166W–100ΩJ
R205	Carbon film resistor	RT13–0.166W–100ΩJ
R212A	Carbon film resistor	RT13–0.166W–100ΩJ
R217A	Carbon film resistor	RT13–0.166W–100ΩJ
R229	Carbon film resistor	RT13–0.166W–100ΩJ
R332A	Carbon film resistor	RT13–0.166W–100ΩJ
R015	Carbon film resistor	RT13–0.166W–100ΩJ
RP21	Carbon film resistor	RT13–0.166W–100ΩJ
RP22	Carbon film resistor	RT13–0.166W–100ΩJ
R206	Carbon film resistor	RT13–0.166W–100ΩJ
R204	Carbon film resistor	RT13–0.166W–150ΩJ
R017	Carbon film resistor	RT13–0.166W–180ΩJ
R018	Carbon film resistor	RT13–0.166W–180ΩJ
R608	Carbon film resistor	RT13–0.166W–180ΩJ
R029	Carbon film resistor	RT13–0.166W–220ΩJ
R619D	Carbon film resistor	RT13–0.166W–220ΩJ
R629A	Carbon film resistor	RT13–0.166W–220ΩJ
R072	Carbon film resistor	RT13–0.166W–330ΩJ
R073	Carbon film resistor	RT13–0.166W–330ΩJ

PARTS LIST (continued)

Position	Parts	Type
R076	Carbon film resistor	RT13–0.166W–330ΩJ
R207	Carbon film resistor	RT13–0.166W–330ΩJ
RP07	Carbon film resistor	RT13–0.166W–330ΩJ
RP08	Carbon film resistor	RT13–0.166W–330ΩJ
R201	Carbon film resistor	RT13–0.166W–390ΩJ
R218A	Carbon film resistor	RT13–0.166W–390ΩJ
R020	Carbon film resistor	RT13–0.166W–470ΩJ
R028	Carbon film resistor	RT13–0.166W–470ΩJ
R022	Carbon film resistor	RT13–0.166W–470ΩJ
R040	Carbon film resistor	RT13–0.166W–470ΩJ
R041	Carbon film resistor	RT13–0.166W–470ΩJ
R050	Carbon film resistor	RT13–0.166W–470ΩJ
R053	Carbon film resistor	RT13–0.166W–470ΩJ
R054	Carbon film resistor	RT13–0.166W–470ΩJ
R209	Carbon film resistor	RT13–0.166W–470ΩJ
R210	Carbon film resistor	RT13–0.166W–470ΩJ
R211	Carbon film resistor	RT13–0.166W–470ΩJ
R217	Carbon film resistor	RT13–0.166W–470ΩJ
RP06	Carbon film resistor	RT13–0.166W–680ΩJ
R108	Carbon film resistor	RT13–0.166W–680ΩJ
RP05	Carbon film resistor	RT13–0.166W–910ΩJ
R038	Carbon film resistor	RT13–0.166W–1KΩJ
R074	Carbon film resistor	RT13–0.166W–1KΩJ
R117	Carbon film resistor	RT13–0.166W–1KΩJ
R220	Carbon film resistor	RT13–0.166W–1KΩJ
R221	Carbon film resistor	RT13–0.166W–1KΩJ
R609	Carbon film resistor	RT13–0.166W–1KΩJ
R630A	Carbon film resistor	RT13–0.166W–1KΩJ
R517	Carbon film resistor	RT13–0.166W–1KΩJ
R118	Carbon film resistor	RT13–0.166W–1.2KΩJ
R085	Carbon film resistor	RT13–0.166W–1.5KΩJ
R523	Carbon film resistor	RT13–0.166W–1.5KΩJ
R035	Carbon film resistor	RT13–0.166W–1.8KΩJ
R036	Carbon film resistor	RT13–0.166W–1.8KΩJ
R037	Carbon film resistor	RT13–0.166W–1.8KΩJ
R103	Carbon film resistor	RT13–0.166W–1.8KΩJ
R432	Carbon film resistor	RT13–0.166W–1.8KΩJ
R205A	Carbon film resistor	RT13–0.166W–2.2KΩJ
R609A	Carbon film resistor	RT13–0.166W–2.2KΩJ
R526	Carbon film resistor	RT13–0.166W–2.7KΩJ
R099	Carbon film resistor	RT13–0.166W–3.3KΩJ
R501A	Carbon film resistor	RT13–0.166W–3.3KΩJ
R016	Carbon film resistor	RT13–0.166W–3.3KΩJ

PARTS LIST (continued)

Position	Parts	Type
R058	Carbon film resistor	RT13–0.166W–3.3KΩJ
R063	Carbon film resistor	RT13–0.166W–3.3KΩJ
R043	Carbon film resistor	RT13–0.166W–4.7KΩJ
R044	Carbon film resistor	RT13–0.166W–4.7KΩJ
R059	Carbon film resistor	RT13–0.166W–4.7KΩJ
R006A	Carbon film resistor	RT13–0.166W–4.7KΩJ
R087	Carbon film resistor	RT13–0.166W–4.7KΩJ
R102	Carbon film resistor	RT13–0.166W–4.7KΩJ
R212	Carbon film resistor	RT13–0.166W–4.7KΩJ
R252	Carbon film resistor	RT13–0.166W–4.7KΩJ
R019	Carbon film resistor	RT13–0.166W–4.7KΩJ
R511	Carbon film resistor	RT13–0.166W–5.6KΩJ
R458A	Carbon film resistor	RT13–0.166W–10KΩJ
R459A	Carbon film resistor	RT13–0.166W–10KΩJ
R457	Carbon film resistor	RT13–0.166W–10KΩJ ⚠FDA
R006	Carbon film resistor	RT13–0.166W–10KΩJ
R007	Carbon film resistor	RT13–0.166W–10KΩJ
R031	Carbon film resistor	RT13–0.166W–10KΩJ
R055	Carbon film resistor	RT13–0.166W–10KΩJ
R208	Carbon film resistor	RT13–0.166W–10KΩJ
R223	Carbon film resistor	RT13–0.166W–10KΩJ
RK51	Carbon film resistor	RT13–0.166W–10KΩJ
RK54	Carbon film resistor	RT13–0.166W–10KΩJ
R465	Carbon film resistor	RT13–0.166W–10KΩJ ⚠FDA
R466	Carbon film resistor	RT13–0.166W–10KΩJ
R467	Carbon film resistor	RT13–0.166W–10KΩJ
R483	Carbon film resistor	RT13–0.166W–10KΩJ
R628	Carbon film resistor	RT13–0.166W–10KΩJ
R634	Carbon film resistor	RT13–0.166W–10KΩJ
R160	Carbon film resistor	RT13–0.166W–10KΩJ
R036A	Carbon film resistor	RT13–0.166W–10KΩJ
R163	Carbon film resistor	RT13–0.166W–10KΩJ
R039	Carbon film resistor	RT13–0.166W–10KΩJ
R162	Carbon film resistor	RT13–0.166W–12KΩJ
R075	Carbon film resistor	RT13–0.166W–15KΩJ
R086	Carbon film resistor	RT13–0.166W–15KΩJ
R501B	Carbon film resistor	RT13–0.166W–15KΩJ
R222	Carbon film resistor	RT13–0.166W–15KΩJ
R522	Carbon film resistor	RT13–0.166W–15KΩJ
R107	Carbon film resistor	RT13–0.166W–18KΩJ
R131	Carbon film resistor	RT13–0.166W–18KΩJ
R026	Carbon film resistor	RT13–0.166W–22KΩJ
R628A	Carbon film resistor	RT13–0.166W–22KΩJ

PARTS LIST (continued)

Position	Parts	Type
R634A	Carbon film resistor	RT13–0.166W–22KΩJ
R515	Carbon film resistor	RT13–0.166W–22KΩJ
RP03	Carbon film resistor	RT13–0.166W–24KΩJ
RP04	Carbon film resistor	RT13–0.166W–24KΩJ
R230	Carbon film resistor	RT13–0.166W–27KΩJ
R225	Carbon film resistor	RT13–0.166W–33KΩJ
R610	Carbon film resistor	RT13–0.166W–33KΩJ
R629	Carbon film resistor	RT13–0.166W–43KΩJ
R633	Carbon film resistor	RT13–0.166W–43KΩJ
R027	Carbon film resistor	RT13–0.166W–47KΩJ
R090	Carbon film resistor	RT13–0.166W–47KΩJ
R289C	Carbon film resistor	RT13–0.166W–47KΩJ
RP01	Carbon film resistor	RT13–0.166W–47KΩJ
RP02	Carbon film resistor	RT13–0.166W–47KΩJ
R561	Carbon film resistor	RT13–0.166W–51KΩJ
R562	Carbon film resistor	RT13–0.166W–51KΩJ
R464	Carbon film resistor	RT13–0.166W–56KΩJ ⚠FDA
R437B	Carbon film resistor	RT13–0.166W–68KΩJ
R218	Carbon film resistor	RT13–0.166W–100KΩJ
R224	Carbon film resistor	RT13–0.166W–100KΩJ
R091	Carbon film resistor	RT13–0.166W–100KΩJ
R446	Carbon film resistor	RT13–0.166W–150KΩJ
R554	Carbon film resistor	RT13–0.166W–150KΩJ
R458	Carbon film resistor	RT13–0.166W–220KΩJ
R441	Carbon film resistor	RT13–0.166W–220KΩJ
R632A	Carbon film resistor	RT13–0.166W–240KΩJ
R013	Carbon film resistor	RT13–0.166W–390KΩJ
R459	Carbon film resistor	RT13–0.166W–680KΩJ
R030	Carbon film resistor	RT13–0.166W–1MΩJ
R413	Carbon film resistor	RT14–0.25W–47ΩJ
R460	Carbon film resistor	RT14–0.25W–220ΩJ
R433	Carbon film resistor	RT14–0.25W–1KΩJ
R115	Carbon film resistor	RT14–0.25W–2.2KΩJ
R553	Carbon film resistor	RT14–0.25W–5.6KΩJ
R412	Carbon film resistor	RT14–0.25W–10KΩJ
R456	Carbon film resistor	RT14–0.25W–10KΩJ
R556	Carbon film resistor	RT14–0.25W–22KΩJ
R864	Carbon film resistor	RT14–0.25W–33KΩJ
R289A	Metal film resistor	RJ14–0.25W–360ΩG
R863	Metal film resistor	RJ14–0.25W–390ΩG
R852	Metal film resistor	RJ14–0.25W–1KΩG
R862	Metal film resistor	RJ14–0.25W–2.2KΩG
R289B	Metal film resistor	RJ14–0.25W–2KΩG

PARTS LIST (continued)

Position	Parts	Type
R403	Metal film resistor	RJ14–0.25W–3KΩJ
R443	Metal film resistor	RJ14–0.25W–3.3KΩJ
R226	Metal film resistor	RJ14–0.25W–39KΩG
R408	Metal oxide film resistor	RY21–0.5W–2.2ΩJ
R408	Metal oxide film resistor	MOS1/2W2R2J
R407	Metal oxide film resistor	RY21–0.5W–2.2ΩJ
R407	Metal oxide film resistor	MOS1/2W2R2J
R404	Metal oxide film resistor	RY21–0.5W–10ΩJ
R404	Metal oxide film resistor	MOS1/2W100J
R410	Metal oxide film resistor	RY21–0.5W–22ΩJ
R410	Metal oxide film resistor	MOS1/2W220J
R442	Metal oxide film resistor	RY21–1W–1KΩJ
R442	Metal oxide film resistor	MOS1W102J
R637	Metal oxide film resistor	RY21–2W–1ΩJ
R637	Metal oxide film resistor	MOS2W1R0J
R405	Metal oxide film resistor	RY21–2W–2.2ΩJ
R405	Metal oxide film resistor	MOS2W2R2J
W026	Metal oxide film resistor	RY21–2W–22ΩJ
W026	Metal oxide film resistor	MOS2W220J
R525	Metal oxide film resistor	RY21–2W–68ΩJ
R525	Metal oxide film resistor	MOS2W680J
R409	Metal oxide film resistor	RY21–2W–220ΩJ
R409	Metal oxide film resistor	MOS2W221J
R877	Metal oxide film resistor	RY21–2W–470ΩJ
R877	Metal oxide film resistor	MOS2W471J
R440	Metal oxide film resistor	RY21–2W–2.4KΩJ
R440	Metal oxide film resistor	MOS2W242J
R555	Metal oxide film resistor	RY21–2W–33KΩJ
R555	Metal oxide film resistor	MOS2W333J
R437	Metal oxide film resistor	RY21–3W–12KΩJ ⚠FDA
R437A	Metal oxide film resistor	RY21–3W–12KΩJ
R500	Metal oxide film resistor	RY21–3W–33KΩJ
R449	Fuse resistor	RF10–0.5W–0.27ΩJ
R881	Fuse resistor	RF10–1W–0.27ΩJ
R871	Fuse resistor	RF10–1W–0.27ΩJ
R872	Fuse resistor	RF10–1W–0.27ΩJ
R450	Fuse resistor	RF10–0.5W–0.68ΩJ
R453	Fuse resistor	RF10–0.5W–0.68ΩJ
R448A	Fuse resistor	RF10–2W–1ΩJ
R524	Wirewound resistor	RXG4–H2–6W–20ΩJ
R502	Wirewound resistor	RXG6–H2–10W–2.2ΩK
R520	Solid resistor	RS11–0.5W–120KΩK
R520	Solid resistor	RI40–0.5W–120KΩK

PARTS LIST (continued)

Position	Parts	Type
R521	Solid resistor	RS11–0.5W–120KΩK
R521	Solid resistor	RI40–0.5W–120KΩK
RT501A	Thermistor	232266296709(PH96709–7Ω)
RP501	Glass glazed resistor	232224413225(VR68–1W–2.2MΩJ
RP501	Glass glazed resistor	RI81–1W–2.2MΩJ
RP551	Glass glazed potentiometer	WI06–2Y–0.125W–2KΩ–A
RP551	Glass glazed potentiometer	VG067TL1B2KΩ
C501C	Ceramic capacitor	CC1–63V–06a–C–10PFJ
C049	Ceramic capacitor	CC1–63V–06a–C–15PFJ
C221	Ceramic capacitor	CC1–63V–06a–C–18PFJ
C050	Ceramic capacitor	CC1–63V–06a–C–18PFJ
C252	Ceramic capacitor	CC1–63V–06a–C–33PFJ
C035	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C036	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C037	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C038	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C040	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C056	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C060	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C071	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C073	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C215	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C217A	Ceramic capacitor	CC1–63V–08a–C–100PFJ
C461	Ceramic capacitor	CC1–63V–08a–SL–220PFJ
C871	Ceramic capacitor	CT1–500V–06c–2B4–470PFK
C873	Ceramic capacitor	CT1–500V–06c–2B4–470PFK
C881	Ceramic capacitor	CT1–500V–06c–2B4–470PFK
C205	Ceramic capacitor	CT1–63V–06a–2B4–1000PFK
C240	Ceramic capacitor	CT1–63V–06a–2B4–1000PFK
C241	Ceramic capacitor	CT1–63V–06a–2B4–1000PFK
CK09	Ceramic capacitor	CT1–63V–06a–2B4–1000PFK
CK10	Ceramic capacitor	CT1–63V–06a–2B4–1000PFK
C699	Ceramic capacitor	CT1–63V–06a–2B4–1000PFK
C120A	Ceramic capacitor	CT1–63V–06a–2B4–1000PFK
C251	Ceramic capacitor	CT1–63V–06a–2B4–1500PFK
C231	Ceramic capacitor	CT1–63V–08a–2B4–2200PFK
C101	Ceramic capacitor	CT1–63V–08a–2B4–4700PFK
C103	Ceramic capacitor	CT1–63V–08a–2B4–4700PFK
C656	Ceramic capacitor	CT1–63V–08a–2B4–4700PFK
C661A	Ceramic capacitor	CT1–63V–08a–2B4–4700PFK
C102	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
C105	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
C104A	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ

PARTS LIST (continued)

Position	Parts	Type
C501A	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
C114	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
C289C	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
C513	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
C861	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
C051	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C063	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C066	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C106	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C212	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C213	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C214	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C225	Ceramic capacitor	CT1–63V–12c–2F4–0.022μFZ
C844	Ceramic capacitor	CT81–250VAC–2E4–2200PFM
C844A	Ceramic capacitor	CT81–250VAC–2E4–2200PFM
C844B	Ceramic capacitor	CT81–250VAC–2E4–2200PFM
C451	Ceramic capacitor	CT1–500V–06c–2B4–220PFK
C452	Ceramic capacitor	CT1–500V–06c–2B4–220PFK
C458	Ceramic capacitor	CT1–500V–06c–2B4–220PFK
C432	Ceramic capacitor	CT1–500V–06c–2B4–820PFK
C503	Ceramic capacitor	CT81–1KV–10C––2B4–1000PFM
C504	Ceramic capacitor	CT81–1KV–10C––2B4–1000PFM
C505	Ceramic capacitor	CT81–1KV–10C––2B4–1000PFM
C506	Ceramic capacitor	CT81–1KV–10C––2B4–1000PFM
C518	Ceramic capacitor	CT81–1KV–10C––2B4–1000PFM
C516	Ceramic capacitor	CT81–2KV–10c–2B4–680PFK
C436	Ceramic capacitor	CT81–2KV–14c–2B4–1500PFK ⚠FDA
C401	Polyester film capacitor	CL12X–50V–1000PFJ
C224	Polyester film capacitor	CL21X–50V–4700PFJ
C229	Polyester film capacitor	CL21X–50V–4700PFJ
C405	Polyester film capacitor	CL21X–50V–0.01μFJ
C407	Polyester film capacitor	CL21X–50V–0.01μFJ
C202	Polyester film capacitor	CL21X–50V–0.022μFJ
C235	Polyester film capacitor	CL21X–50V–0.022μFJ
C517	Polyester film capacitor	CL21X–50V–0.033μFJ
C515	Polyester film capacitor	CL21X–50V–0.033μFJ
C485	Polyester film capacitor	CL21X–50V–0.047μFJ
C201	Polyester film capacitor	CL21X–50V–0.1μFJ
C204	Polyester film capacitor	CL21X–50V–0.1μFJ
C207	Polyester film capacitor	CL21X–50V–0.1μFJ
C222	Polyester film capacitor	CL21X–50V–0.1μFJ
C223	Polyester film capacitor	CL21X–50V–0.1μFJ
C228	Polyester film capacitor	CL21X–50V–0.1μFJ

PARTS LIST (continued)

Position	Parts	Type
C233	Polyester film capacitor	CL21X–50V–0.1μFJ
CD04	Polyester film capacitor	CL21X–50V–0.1μFJ
C403	Polyester film capacitor	CL21X–50V–0.1μFJ
C409	Polyester film capacitor	CL21X–50V–0.1μFJ
C460	Polyester film capacitor	CL21X–50V–0.1μFJ
C654	Polyester film capacitor	CL21X–50V–0.1μFJ
C658	Polyester film capacitor	CL21X–50V–0.1μFJ
CP30	Polyester film capacitor	CL21X–50V–0.1μFJ
CP31	Polyester film capacitor	CL21X–50V–0.1μFJ
RD02	Polyester film capacitor	CL21X–50V–0.1μFJ
C227A	Polyester film capacitor	CL21X–50V–0.1μFJ
C514	Polyester film capacitor	CL21X–50V–0.1μFJ
C484	Polyester film capacitor	CL21X–50V–0.1μFJ
C209	Polyester film capacitor	CL21X–50V–0.22μFJ
C232	Polyester film capacitor	CL21X–50V–0.22μFJ
C406	Polyester film capacitor	CL21X–50V–0.22μFJ
C671A	Polyester film capacitor	CL21X–50V–0.22μFJ
C208	Polyester film capacitor	CL21X–50V–0.47μFJ
C210	Polyester film capacitor	CL21X–50V–0.47μFJ
C234	Polyester film capacitor	CL21X–50V–0.47μFJ
C475	Polyester film capacitor	CL21X–160V–0.056μFJ
C479	Polyester film capacitor	CL21X–250V–0.1μFJ
C483	Polyester film capacitor	CL21X–250V–0.1μFJ
C501	Polypropylene capacitor	CBB62–250VAC–0.1μFK
C501	Polypropylene capacitor	222233550104
C502	Polypropylene capacitor	CBB62–250VAC–0.1μFK
C502	Polypropylene capacitor	222233550104
C440	Polypropylene capacitor	CBB13–400V–0.33μFJ
C500	Polypropylene capacitor	CBB13–630V–0.022μFJ
C476	Polypropylene capacitor	CBB81–1.6KV–2200PFJ
C437	Polypropylene capacitor	CBB81–1.6KV–6.2nFJ ⚠FDA
C203	Aluminum electrolytic capacitor	CD110X–16V–2.2μFM
C676A	Aluminum electrolytic capacitor	CD110X–16V–4.7μFM
C072	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C009	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C617	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C104	Aluminum electrolytic capacitor	CD110X–16V–22μFM
C289A	Aluminum electrolytic capacitor	CD110X–16V–22μFM
C211	Aluminum electrolytic capacitor	CD110X–16V–47μFM
CP25	Aluminum electrolytic capacitor	CD110X–16V–47μFM
C107	Aluminum electrolytic capacitor	CD110X–16V–47μFM
CD03	Aluminum electrolytic capacitor	CD110X–16V–47μFM
C501B	Aluminum electrolytic capacitor	CD110X–16V–47μFM

PARTS LIST (continued)

Position	Parts	Type
CD05	Aluminum electrolytic capacitor	CD110X–16V–47μFM
C462	Aluminum electrolytic capacitor	CD110X–16V–47μFM
C062	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C206	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C226	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C106B	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C631A	Aluminum electrolytic capacitor	CD110X–16V–220μFM
C115	Aluminum electrolytic capacitor	CD110X–16V–220μFM
C853	Aluminum electrolytic capacitor	CD110X–16V–220μFM
C862	Aluminum electrolytic capacitor	CD110X–16V–220μFM
C864	Aluminum electrolytic capacitor	CD110X–16V–220μFM
C289B	Aluminum electrolytic capacitor	CD110X–16V–2200μFM
C480	Aluminum electrolytic capacitor	CD110X–25V–100μFM
C882	Aluminum electrolytic capacitor	CD110X–25V–220μFM
C404	Aluminum electrolytic capacitor	CD110X–25V–1000μFM
C449	Aluminum electrolytic capacitor	CD110X–25V–1000μFM
C666A	Aluminum electrolytic capacitor	CD110X–25V–1000μFM
C872	Aluminum electrolytic capacitor	CD110X–25V–1000μFM
C874	Aluminum electrolytic capacitor	CD110X–25V–1000μFM
C008	Aluminum electrolytic capacitor	CD110X–50V–0.47μFM
C227	Aluminum electrolytic capacitor	CD110X–50V–1μFM
C230	Aluminum electrolytic capacitor	CD110X–50V–1μFM
C634A	Aluminum electrolytic capacitor	CD110X–50V–1μFM
C203	Aluminum electrolytic capacitor	CD110X–50V–2.2μFM
C108	Aluminum electrolytic capacitor	CD110X–50V–47μFM
C402A	Aluminum electrolytic capacitor	CD110X–63V–22μFM
C448	Aluminum electrolytic capacitor	CD110X–63V–100μFM
C434	Aluminum electrolytic capacitor	CD110X–160V–4.7μFM
C441	Aluminum electrolytic capacitor	CD110X–160V–4.7μFM
C561	Aluminum electrolytic capacitor	CD288–160V–220μFM
C507	Aluminum electrolytic capacitor	CD289–200V–470μFM
C507	Aluminum electrolytic capacitor	CD293–200V–470μFM
C450	Aluminum electrolytic capacitor	CD110X–250V–10μFM
C459	Aluminum electrolytic capacitor	CD110X–250V–10μFM
L206	Fixed inductor	LGA0307–22μHK
L219	Fixed inductor	LGA0307–22μHK
L102	Fixed inductor	LGB0606–1μHK
L617	Fixed inductor	LGB0606–8.2μHJ
R106	Fixed inductor	LGB0606–56μHJ
W106B	Fixed inductor	LGB0606–56μHJ
L872	Fixed inductor	TLN2026–11μHK
L874	Fixed inductor	TLN2026–11μHK
L876	Fixed inductor	TLN3142D–95μHK

PARTS LIST (continued)

Position	Parts	Type
L433B	Horizontal amplitude inductor	TLN0028A
L871	Feed–through inductor	TEM2000
L873	Feed–through inductor	TEM2000
L401	Feed–through inductor	TEM2011
L402	Feed–through inductor	TEM2011
L431B	Feed–through inductor	TEM2011
L433	Horizontal linear coil	HXT39
L431A	Line drive transformer	BCT–4
T402	FBT	BSC62B ⚠FDA
VD111	Diode	2CK75D
VD111	Diode	1N4148
VD112	Diode	2CK75D
VD112	Diode	1N4148
VD001	Diode	2CK75D
VD001	Diode	1N4148
VD002	Diode	2CK75D
VD002	Diode	1N4148
VD044	Diode	2CK75D
VD044	Diode	1N4148
VD113	Diode	2CK75D
VD113	Diode	1N4148
VD044B	Diode	2CK75D
VD044B	Diode	1N4148
VD457A	Diode	2CK75D
VD457A	Diode	1N4148
VD631A	Diode	2CK75D
VD631A	Diode	1N4148
VD634A	Diode	2CK75D
VD634A	Diode	1N4148
VD481	Diode	2CK75D
VD481	Diode	1N4148
VD482	Diode	2CK75D
VD482	Diode	1N4148
VD514	Diode	2CK75D
VD514	Diode	1N4148
VD516	Diode	2CK75D
VD516	Diode	1N4148
VD518	Diode	2CK75D
VD518	Diode	1N4148
VD861	Diode	2CK75D
VD861	Diode	1N4148
VD863	Diode	2CK75D
VD863	Diode	1N4148

PARTS LIST (continued)

Position	Parts	Type
VD501A	Diode	2CK75D
VD501A	Diode	1N4148
VD402	Diode	BAV21
VD475	Diode	BAV21
VD443	Diode	BAV21
VD402A	Diode	BAV21
VD437	Diode	2CZRU2
VD438	Diode	2CZRU2
VD440	Diode	2CZRU2
VD871	Diode	2CZRU2
VD881	Diode	2CZRU2
VD872	Diode	2CZRU4Z
VD551	Diode	BYM26D
VD500	Diode	BYV26D
VD008	Diode	W05Z3.6A
VD204	Diode	W05Z5.1B
VD851	Diode	W05Z5.6C
VD561	Diode	W05Z6.2C ⚠FDA
VD519	Diode	W05Z7.5C
VD439	Diode	W05Z8.2B ⚠FDA
VD517	Diode	2CZES1
VD501	Diode	RL205
VD502	Diode	RL205
VD503	Diode	RL205
VD504	Diode	RL205
VD515	Diode	LTV-816
V009	Triode	3CG1015-Y
V009	Triode	2SA1015-Y
V009	Triode	2PA1015GR
V436	Triode	3CG1015-Y
V436	Triode	2SA1015-Y
V436	Triode	2PA1015GR
V437	Triode	3CG1015-Y
V437	Triode	2SA1015-Y
V437	Triode	2PA1015GR
V632A	Triode	3CG1015-Y
V632A	Triode	2SA1015-Y
V632A	Triode	2PA1015GR
V511	Triode	3CG1015-Y
V511	Triode	2SA1015-Y
V511	Triode	2PA1015-Y
V001	Triode	3DG1815-Y
V001	Triode	2SC1815-Y

PARTS LIST (continued)

Position	Parts	Type
V001	Triode	2PC1815GR
V002	Triode	3DG1815–Y
V002	Triode	2SC1815–Y
V002	Triode	2PC1815GR
V204	Triode	3DG1815–Y
V204	Triode	2SC1815–Y
V204	Triode	2PC1815GR
V217	Triode	3DG1815–Y
V217	Triode	2SC1815–Y
V217	Triode	2PC1815GR
V227	Triode	3DG1815–Y
V227	Triode	2SC1815–Y
V227	Triode	2PC1815GR
V289	Triode	3DG1815–Y
V289	Triode	2SC1815–Y
V289	Triode	2PC1815GR
V609	Triode	3DG1815–Y
V609	Triode	2SC1815–Y
V609	Triode	2PC1815GR
V631A	Triode	3DG1815–Y
V631A	Triode	2SC1815–Y
V631A	Triode	2PC1815GR
VP01	Triode	3DG1815–Y
VP01	Triode	2SC1815–Y
VP01	Triode	2PC1815GR
VP02	Triode	3DG1815–Y
VP02	Triode	2SC1815–Y
VP02	Triode	2PC1815GR
V438	Triode	3DG1815–Y
V438	Triode	2SC1815–Y
V438	Triode	2PC1815GR
V553	Triode	3DG1815–Y
V553	Triode	2SC1815–Y
V553	Triode	2PC1815GR
V862	Triode	3DG1815–Y
V862	Triode	2SC1815–Y
V862	Triode	2PC1815GR
V104	Triode	2SC388ATM
V104	Triode	KSC388C–Y
V512	Triode	2SC3807
V512	Triode	2SC3807A
V513	Triode	2SC4423M
V432	Triode	3DA2688F

PARTS LIST (continued)

Position	Parts	Type
V432	Triode	3DA2688H
V432	Triode	2SC2688–L
V851	Triode	2SC3852
V501A	Triode	2SC2655Y
V433	Triode	3DD2102
V433	Triode	3DD1651
SR501	Relay	JZC–36F(005–HS)
N002	IC	AT24C08–10PI
N002	IC	M24C08–BN6
N601	IC	TDA7057AQ
N401	IC	TDA8350Q–N6
N301	IC	OM8839PS
N301	IC	OM8843
N863	IC	L78L05ACZ
N001	IC	CH04T1004
VD114	IC	KA33V
VD114	IC	μPC574J
VD114	IC	CW574CS
N402	IC	LM317T
N861	IC	LM317T
NP02	IC	HEF4053BP
NP02	IC	MC14053BCP
NP02	IC	HCF4053BE
N103	IC	TA78L009AP
Z202	Crystal oscillator	JA18A1–3.579545MHz
Z001	Crystal oscillator	JA18D–32.768KHz
A101	Electronic tuner	TDQ–6F2–M
Z601	Ceramic trap	TPSRA4M50B00–B0
Z601	Ceramic trap	XT4.5MB
Z101	Surface acoustic wave filter	M1958M
T511	Switch transformer	BCK–24203L
L502	Line filter	LCL–F15
L503	Line filter	LCL–F16
F501	Delay fuse	U/C/T 51S 125V 5A
	Power switch	KDC–A04–MU171
	Power cord	RVVZ–2U2M–C17
	Degaussing coil	XC–21
		Manual jumper
W697	Jumper	10mm
W698	Jumper	10mm
W699	Jumper	10mm
		Auto jumper

PARTS LIST (continued)

Position	Parts	Type
W208	Jumper	5mm
W210	Jumper	5mm
W211	Jumper	5mm
W091	Jumper	5mm
W110	Jumper	5mm
W220	Jumper	5mm
W252	Jumper	5mm
W283	Jumper	5mm
W472	Jumper	5mm
CP32	Jumper	5mm
R064	Jumper	7.5mm
W001	Jumper	7.5mm
W005	Jumper	7.5mm
W007	Jumper	7.5mm
W011	Jumper	7.5mm
W012	Jumper	7.5mm
W013	Jumper	7.5mm
W015	Jumper	7.5mm
W019	Jumper	7.5mm
W020	Jumper	7.5mm
W030	Jumper	7.5mm
W031	Jumper	7.5mm
W033	Jumper	7.5mm
W043	Jumper	7.5mm
R038A	Jumper	7.5mm
VD120A	Jumper	7.5mm
W055	Jumper	7.5mm
W057	Jumper	7.5mm
W067	Jumper	7.5mm
W081C	Jumper	7.5mm
W082C	Jumper	7.5mm
W090	Jumper	7.5mm
W092	Jumper	7.5mm
W104	Jumper	7.5mm
W105	Jumper	7.5mm
W106	Jumper	7.5mm
W130	Jumper	7.5mm
W301	Jumper	7.5mm
W430	Jumper	7.5mm
W053	Jumper	7.5mm
W138	Jumper	7.5mm
W151	Jumper	7.5mm

PARTS LIST (continued)

Position	Parts	Type
W152	Jumper	7.5mm
W153	Jumper	7.5mm
W200	Jumper	7.5mm
W202	Jumper	7.5mm
W202A	Jumper	7.5mm
W204	Jumper	7.5mm
W216	Jumper	7.5mm
W217	Jumper	7.5mm
W219	Jumper	7.5mm
W222	Jumper	7.5mm
W235	Jumper	7.5mm
W280	Jumper	7.5mm
W403	Jumper	7.5mm
W452	Jumper	7.5mm
W613	Jumper	7.5mm
W614	Jumper	7.5mm
WP10	Jumper	7.5mm
W508	Jumper	7.5mm
L204A	Jumper	10mm
R047	Jumper	10mm
R077	Jumper	10mm
RD01	Jumper	10mm
VD212	Jumper	10mm
W002	Jumper	10mm
W008	Jumper	10mm
W432	Jumper	10mm
W009	Jumper	10mm
W009A	Jumper	10mm
W010B	Jumper	10mm
W016	Jumper	10mm
W018B	Jumper	10mm
W022	Jumper	10mm
W023	Jumper	10mm
W030B	Jumper	10mm
W031B	Jumper	10mm
W034	Jumper	10mm
W051	Jumper	10mm
W063	Jumper	10mm
W075	Jumper	10mm
W107	Jumper	10mm
W109	Jumper	10mm
W231	Jumper	10mm
W514	Jumper	10mm

PARTS LIST (continued)

Position	Parts	Type
W515	Jumper	10mm
W027	Jumper	10mm
W213	Jumper	10mm
W450	Jumper	10mm
W451	Jumper	10mm
VD201A	Jumper	10mm
W118A	Jumper	10mm
W203	Jumper	10mm
W205	Jumper	10mm
W209B	Jumper	10mm
W210A	Jumper	10mm
W212	Jumper	10mm
W214	Jumper	10mm
W221	Jumper	10mm
W223	Jumper	10mm
W225	Jumper	10mm
W227	Jumper	10mm
W228	Jumper	10mm
W251	Jumper	10mm
W256A	Jumper	10mm
W282	Jumper	10mm
W405	Jumper	10mm
W616	Jumper	10mm
W617	Jumper	10mm
W505	Jumper	10mm
W506	Jumper	10mm
W233	Jumper	10mm
W236	Jumper	10mm
W239	Jumper	10mm
W409	Jumper	10mm
W232	Jumper	10mm
W006A	Jumper	12.5mm
W021	Jumper	12.5mm
W028	Jumper	12.5mm
W072	Jumper	12.5mm
W079	Jumper	12.5mm
W123	Jumper	12.5mm
W131	Jumper	12.5mm
W219A	Jumper	12.5mm
W226	Jumper	12.5mm
W230	Jumper	12.5mm
W232B	Jumper	12.5mm

PARTS LIST (continued)

Position	Parts	Type
W248	Jumper	12.5mm
W249	Jumper	12.5mm
W274	Jumper	12.5mm
W275	Jumper	12.5mm
W285	Jumper	12.5mm
W402	Jumper	12.5mm
W406	Jumper	12.5mm
W424	Jumper	12.5mm
W431	Jumper	12.5mm
W401	Jumper	12.5mm
W302	Jumper	12.5mm
W224	Jumper	12.5mm
VD031	Jumper	15mm
VD032	Jumper	15mm
VD033	Jumper	15mm
VD034	Jumper	15mm
W025	Jumper	15mm
W052	Jumper	15mm
W081	Jumper	15mm
W081B	Jumper	15mm
W082	Jumper	15mm
W215	Jumper	15mm
W229	Jumper	15mm
W268	Jumper	15mm
W323	Jumper	15mm
W428	Jumper	15mm
W444	Jumper	15mm
W464	Jumper	15mm
W496	Jumper	15mm
W501B	Jumper	15mm
W509	Jumper	15mm
W615	Jumper	15mm
W408	Jumper	15mm
W029	Jumper	17.5mm
W036	Jumper	17.5mm
W037	Jumper	17.5mm
W062	Jumper	17.5mm
W201	Jumper	17.5mm
W206	Jumper	17.5mm
W286	Jumper	17.5mm
W288	Jumper	17.5mm
W300	Jumper	17.5mm

PARTS LIST (continued)

Position	Parts	Type
W644	Jumper	17.5mm
VD035	Jumper	17.5mm
W006	Jumper	20mm
W017	Jumper	20mm
W032	Jumper	20mm
W049	Jumper	20mm
W050	Jumper	20mm
W080B	Jumper	20mm
W101	Jumper	20mm
W102	Jumper	20mm
W103	Jumper	20mm
W108	Jumper	20mm
W116	Jumper	20mm
W132	Jumper	20mm
W134	Jumper	20mm
W290	Jumper	20mm
W407	Jumper	20mm
W417	Jumper	20mm
W419	Jumper	20mm
W439	Jumper	20mm
W610	Jumper	20mm
W611	Jumper	20mm
W612	Jumper	20mm
W618	Jumper	20mm
W811	Jumper	20mm
W261	Jumper	25mm
		Parts on AV PCB
RS15	Carbon film resistor	RT13–0.166W–75ΩJ
RS01	Carbon film resistor	RT13–0.166W–82ΩJ
RS08	Carbon film resistor	RT13–0.166W–82ΩJ
RS11	Carbon film resistor	RT13–0.166W–82ΩJ
RS04	Carbon film resistor	RT13–0.166W–82ΩJ
RS13A	Carbon film resistor	RT13–0.166W–82ΩJ
RS14A	Carbon film resistor	RT13–0.166W–82ΩJ
RS43	Carbon film resistor	RT13–0.166W–82ΩJ
RS48	Carbon film resistor	RT13–0.166W–82ΩJ
RS50	Carbon film resistor	RT13–0.166W–82ΩJ
RS12	Carbon film resistor	RT13–0.166W–100ΩJ
RS13	Carbon film resistor	RT13–0.166W–100ΩJ
RS14	Carbon film resistor	RT13–0.166W–100ΩJ

PARTS LIST (continued)

Position	Parts	Type
RS18	Carbon film resistor	RT13–0.166W–100ΩJ
RS31	Carbon film resistor	RT13–0.166W–100ΩJ
RS35	Carbon film resistor	RT13–0.166W–100ΩJ
RS37	Carbon film resistor	RT13–0.166W–100ΩJ
RS40	Carbon film resistor	RT13–0.166W–100ΩJ
RS41	Carbon film resistor	RT13–0.166W–100ΩJ
RS83	Carbon film resistor	RT13–0.166W–100ΩJ
RS84	Carbon film resistor	RT13–0.166W–100ΩJ
RS47	Carbon film resistor	RT13–0.166W–120ΩJ
RS49	Carbon film resistor	RT13–0.166W–120ΩJ
RS51	Carbon film resistor	RT13–0.166W–120ΩJ
RS19	Carbon film resistor	RT13–0.166W–470ΩJ
RS21	Carbon film resistor	RT13–0.166W–470ΩJ
RS30	Carbon film resistor	RT13–0.166W–1KΩJ
RS32	Carbon film resistor	RT13–0.166W–1KΩJ
RS34	Carbon film resistor	RT13–0.166W–1KΩJ
RS36	Carbon film resistor	RT13–0.166W–1KΩJ
RS38	Carbon film resistor	RT13–0.166W–1KΩJ
RS39	Carbon film resistor	RT13–0.166W–1KΩJ
RS17	Carbon film resistor	RT13–0.166W–1.5KΩJ
RS16	Carbon film resistor	RT13–0.166W–1.5KΩJ
RS23	Carbon film resistor	RT13–0.166W–1.5KΩJ
RS28	Carbon film resistor	RT13–0.166W–1.5KΩJ
RS24	Carbon film resistor	RT13–0.166W–33KΩJ
RS26	Carbon film resistor	RT13–0.166W–33KΩJ
RS25	Carbon film resistor	RT13–0.166W–47KΩJ
RS27	Carbon film resistor	RT13–0.166W–47KΩJ
RS02	Carbon film resistor	RT13–0.166W–100KΩJ
RS03	Carbon film resistor	RT13–0.166W–100KΩJ
RS05	Carbon film resistor	RT13–0.166W–100KΩJ
RS06	Carbon film resistor	RT13–0.166W–100KΩJ
RS09	Carbon film resistor	RT13–0.166W–100KΩJ
RS10	Carbon film resistor	RT13–0.166W–100KΩJ
RS20	Carbon film resistor	RT13–0.166W–100KΩJ
RS22	Carbon film resistor	RT13–0.166W–100KΩJ
CS21	Ceramic capacitor	CT1–63V–08a–2F4–0.01μFZ
CS23	Ceramic capacitor	CT1–63V–08a–2F4–0.01μFZ
CS34	Ceramic capacitor	CT1–63V–08a–2F4–0.01μFZ
CS14	Polyester film capacitor	CL21X–50V–0.01μFJ
CS09	Aluminum electrolytic capacitor	CD110X–50V–1μFM
CS08	Aluminum electrolytic capacitor	CD110X–50V–1μFM
CS01	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS02	Aluminum electrolytic capacitor	CD110X–16V–10μFM

PARTS LIST (continued)

Position	Parts	Type
CS03	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS11	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS12	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS13	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS15	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS16	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS17	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS18	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS19	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS20	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS25	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS26	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS35	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS36	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CS06	Aluminum electrolytic capacitor	CD110X–16V–47μFM
CS07	Aluminum electrolytic capacitor	CD110X–16V–47μFM
CS22	Aluminum electrolytic capacitor	CD110X–16V–47μFM
CS24	Aluminum electrolytic capacitor	CD110X–16V–47μFM
CS37	Aluminum electrolytic capacitor	CD110X–16V–47μFM
VS05	Diode	2CK75D
VS05	Diode	1N4148
VS01	Triode	2SC1815–Y
VS01	Triode	3DG1815–Y
VS01	Triode	2PC1815GR
VS02	Triode	2SC1815–Y
VS02	Triode	3DG1815–Y
VS02	Triode	2PC1815GR
VS07	Triode	2SC1815–Y
VS07	Triode	3DG1815–Y
VS07	Triode	2PC1815GR
DS01	IC	TA1219AN
DS02	IC	TA78L009AP
XS01	AV terminals	AV–1S–14PKA
		Auto jumper
WS03	Jumper	5mm
WS08	Jumper	5mm
CS04	Jumper	5mm
LS01	Jumper	5mm
LS02	Jumper	5mm
LS03	Jumper	5mm
LS04	Jumper	5mm
LS05	Jumper	5mm
LS06	Jumper	5mm

PARTS LIST (continued)

Position	Parts	Type
LS08	Jumper	5mm
LS09	Jumper	5mm
LS10	Jumper	5mm
LS11	Jumper	5mm
LS13	Jumper	5mm
LS14	Jumper	5mm
LS16	Jumper	5mm
LS17	Jumper	5mm
LS18	Jumper	5mm
WS04	Jumper	7.5mm
WS09	Jumper	7.5mm
WS10	Jumper	7.5mm
WS11	Jumper	7.5mm
WS12	Jumper	7.5mm
WS13	Jumper	7.5mm
WS14	Jumper	7.5mm
WS01	Jumper	12.5mm
WS02	Jumper	12.5mm
WS05	Jumper	15mm
WS06	Jumper	15mm
WS07	Jumper	15mm
		Parts on CRT RGB PCB
RY01A	Carbon film resistor	RT14–0.25W–330ΩJ
RY02A	Carbon film resistor	RT14–0.25W–330ΩJ
RY03A	Carbon film resistor	RT14–0.25W–330ΩJ
RY01	Glass glazed resistor	RI40–0.5W–1.5KΩK
RY02	Glass glazed resistor	RI40–0.5W–1.5KΩK
RY03	Glass glazed resistor	RI40–0.5W–1.5KΩK
RY04	Metal oxide film resistor	RY21–1W–68ΩJ
RY04	Metal oxide film resistor	MOS1W680J
RY04A	Fuse resistor	RF10–0.5W–47ΩJ
RY12	Fuse resistor	RF10–2W–2.2ΩJ
CY02	Polyester film capacitor	CL21X–250V–0.1μFJ
CY05	Polypropylene capacitor	CBB81–1.6KV–2200PFJ
CY01	Aluminum electrolytic capacitor	CD110X–250V–10μFM
CY01	Aluminum electrolytic capacitor	UVR2E100MPAANH
CY01A	Aluminum electrolytic capacitor	CD110X–250V–10μFM
CY01A	Aluminum electrolytic capacitor	UVR2E100MPAANH
VDY01A	Diode	BAV21

PARTS LIST (continued)

Position	Parts	Type
VDY02A	Diode	BAV21
VDY03A	Diode	BAV21
NY01	IC	TDA6107Q
SY01	GZS CRT socket	GZS10–2–AC3
SY01	GZS CRT socket	GZS10–2–108
		Auto jumper
WY04	Jumper	7.5mm
CY04	Jumper	10mm
WY12A	Jumper	12.5mm
RY11	Jumper	12.5mm
		Parts on Control Buttons PCB
RK52	Carbon film resistor	RT13–0.166W–5.1KΩJ
RK56	Carbon film resistor	RT13–0.166W–5.1KΩJ
RK53	Carbon film resistor	RT13–0.166W–15KΩJ
RK55	Carbon film resistor	RT13–0.166W–15KΩJ
KK01	Feather touch switch	KA1W6×5–41
KK02	Feather touch switch	KA1W6×5–41
KK03	Feather touch switch	KA1W6×5–41
KK04	Feather touch switch	KA1W6×5–41
KK05	Feather touch switch	KA1W6×5–41
KK06	Feather touch switch	KA1W6×5–41
		Parts on No.2 Control Buttons PCB
RK07	Carbon film resistor	RT13–0.166W–330ΩJ
RK09	Carbon film resistor	RT13–0.166W–1KΩJ
CK08	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK07	Aluminum electrolytic capacitor	CD110X–16V–10μFM
VDK03	Diode	FG5RD
NK03	IC	HS0038
NK03	IC	HS0038A
NK03	IC	HS0038A2
		Parts on Stereo PCB
R108A	Carbon film resistor	RT13–0.166W–10ΩJ
R105A	Chip resistor	CR1/10270JV
R105A	Chip resistor	RC05K270JT
R106A	Chip resistor	CR1/10470JV
R106A	Chip resistor	RC05K470JT
RP15	Chip resistor	CR1/10470JV
RP15	Chip resistor	RC05K470JT
R648M	Chip resistor	CR1/10101JV
R648M	Chip resistor	RC05K101JT
R649M	Chip resistor	CR1/10101JV
R649M	Chip resistor	RC05K101JT

PARTS LIST (continued)

Position	Parts	Type
R653M	Chip resistor	CR1/10101JV
R653M	Chip resistor	RC05K101JT
R654M	Chip resistor	CR1/10101JV
R654M	Chip resistor	RC05K101JT
RP13	Chip resistor	CR1/10101JV
RP13	Chip resistor	RC05K101JT
RP16	Chip resistor	CR1/10181JV
RP16	Chip resistor	RC05K181JT
R104A	Chip resistor	CR1/10102JV
R104A	Chip resistor	RC05K102JT
R107A	Chip resistor	CR1/10122JV
R107A	Chip resistor	RC05K122JT
R103A	Chip resistor	CR1/10182JV
R103A	Chip resistor	RC05K182JT
R102A	Chip resistor	CR1/10472JV
R102A	Chip resistor	RC05K472JT
R650M	Chip resistor	CR1/10103JV
R650M	Chip resistor	RC05K103JT
R651M	Chip resistor	CR1/10103JV
R651M	Chip resistor	RC05K103JT
R652M	Chip resistor	CR1/10103JV
R652M	Chip resistor	RC05K103JT
RP14	Chip resistor	CR1/10103JV
RP14	Chip resistor	RC05K103JT
RP17	Chip resistor	CR1/10683JV
RP17	Chip resistor	RC05K683JT
RP18	Chip resistor	CR1/10683JV
RP18	Chip resistor	RC05K683JT
RP19	Chip resistor	CR1/10225JV
RP19	Chip resistor	RC05K225JT
C680M	Chip capacitor	CRM40CK010C50PT
C680M	Chip capacitor	0805CG1R0C500NT
C681M	Chip capacitor	GRM40CH100D50PT
C681M	Chip capacitor	0805CG100D500NT
CP07	Chip capacitor	0805CG330J500NT
CP08	Chip capacitor	0805CG390J500NT
C678M	Chip capacitor	0805CG560J500NT
C677M	Chip capacitor	0805CG560J500NT
C652M	Chip capacitor	0805CG221J500NT
C651M	Chip capacitor	0805CG471J500NT
C674M	Chip capacitor	0805CG471J500NT
C662M	Chip capacitor	0805CG471J500NT
C655M	Chip capacitor	0805CG102J500NT

PARTS LIST (continued)

Position	Parts	Type
C658M	Chip capacitor	0805CG102J500NT
C650M	Chip capacitor	ECUV1H152KBN
C650M	Chip capacitor	0805CG152K500NT
C663M	Chip capacitor	ECUV1H152KBN
C663M	Chip capacitor	0805CG152K500NT
C675M	Chip capacitor	ECUV1H152KBN
C675M	Chip capacitor	0805CG152K500NT
CP15	Chip capacitor	ECUV1H152KBN
CP15	Chip capacitor	0805CG152K500NT
C102A	Chip capacitor	ECUV1H472KBG
C102A	Chip capacitor	0805CG472K500NT
C106A	Chip capacitor	0805B103K500NT
C107A	Chip capacitor	0805B103K500NT
C108A	Chip capacitor	0805B103K500NT
CP06	Chip capacitor	0805B103K500NT
CP04	Chip capacitor	0805B103K500NT
CP13	Chip capacitor	0805B103K500NT
C654M	Chip capacitor	0805B103K500NT
CP05	Chip capacitor	0805B104K500NT
C667M	Chip capacitor	0805B104K500NT
C673M	Chip capacitor	0805B104K500NT
C684M	Chip capacitor	0805B104K500NT
CP03	Polyester film capacitor	CL21X–50V–0.1μFJ
CP14	Polyester film capacitor	CL21X–50V–0.22μFJ
C656M	Aluminum electrolytic capacitor	CD110X–50V–1μFM
C657M	Aluminum electrolytic capacitor	CD110X–50V–1μFM
C666M	Aluminum electrolytic capacitor	CD110X–16V–3.3μFM
C653M	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C661M	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C665M	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C670M	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C671M	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C672M	Aluminum electrolytic capacitor	CD110X–16V–10μFM
C659M	Aluminum electrolytic capacitor	CD110X–16V–22μFM
C660M	Aluminum electrolytic capacitor	CD110X–16V–22μFM
CP12	Aluminum electrolytic capacitor	CD110X–16V–47μFM
C649M	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C664M	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C676M	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C683M	Aluminum electrolytic capacitor	CD110X–16V–100μFM
C685M	Aluminum electrolytic capacitor	CD110X–16V–100μFM
L101	Fixed inductor	LGB0606–1μHJ
LP02	Fixed inductor	LGB0606–22μHJ

PARTS LIST (continued)

Position	Parts	Type
L651M	Fixed inductor	LGB0606–22μHJ
L108	Fixed inductor	LGB0606–68μHJ
L650M	Fixed inductor	LGB0606–100μHJ
L652M	Fixed inductor	LGB0606–100μHJ
VD650M	Diode	W05Z4.3A
V650M	Triode	3DG1815–Y
V650M	Triode	2SC1815–Y
V650M	Triode	2PC1815GR
V101	Triode	KSC388C–Y
V101	Triode	2SC388ATM
L110	IF transformer	ST6037
Z102	Surface acoustic wave filter	M3953M
Z103	Surface acoustic wave filter	M9352M
NQ102	IC	TDA9808/V4
N606M	IC	MSP3440G–B8
Z650M	Crystal oscillator	JA18A1–18.432MHz
		Manual jumper
W002M	Jumper	5mm
W001M	Jumper	7.5mm
W003M	Jumper	7.5mm
W004M	Jumper	12.5mm
		Parts on Comb Filter PCB
RK17	Carbon film resistor	RT13–0.166W–100ΩJ
RK27	Carbon film resistor	RT13–0.166W–100ΩJ
RK35	Carbon film resistor	RT13–0.166W–100ΩJ
RK33	Carbon film resistor	RT13–0.166W–390ΩJ
RK41	Carbon film resistor	RT13–0.166W–390ΩJ
RK14	Carbon film resistor	RT13–0.166W–470ΩJ
RK19	Carbon film resistor	RT13–0.166W–470ΩJ
RK29	Carbon film resistor	RT13–0.166W–470ΩJ
RK09	Carbon film resistor	RT13–0.166W–820ΩJ
RK18	Carbon film resistor	RT13–0.166W–820ΩJ
RK28	Carbon film resistor	RT13–0.166W–820ΩJ
RK34	Carbon film resistor	RT13–0.166W–820ΩJ
RK10	Carbon film resistor	RT13–0.166W–1KΩJ
RK32	Carbon film resistor	RT13–0.166W–1KΩJ
RK20	Carbon film resistor	RT13–0.166W–1.2KΩJ
RK15	Carbon film resistor	RT13–0.166W–1.5KΩJ
RK30	Carbon film resistor	RT13–0.166W–3.9KΩJ
RK12	Carbon film resistor	RT13–0.166W–8.2KΩJ
RK07	Carbon film resistor	RT13–0.166W–10KΩJ
RK08	Carbon film resistor	RT13–0.166W–10KΩJ
RK13	Carbon film resistor	RT13–0.166W–12KΩJ

PARTS LIST (continued)

Position	Parts	Type
RK31	Carbon film resistor	RT13–0.166W–12KΩJ
RK06	Carbon film resistor	RT13–0.166W–560KΩJ
RK21	Carbon film resistor	RT13–0.166W–560KΩJ
CK23	Ceramic capacitor	CC1–63V–06a–SL–10PFD
CK26	Ceramic capacitor	CC1–63V–06a–SL–12PFJ
CK29	Ceramic capacitor	CC1–63V–06a–SL–12PFJ
CK30	Ceramic capacitor	CC1–63V–06a–SL–12PFJ
CK27	Ceramic capacitor	CC1–63V–06a–SL–12PFJ
CK12A	Ceramic capacitor	CC1–63V–06a–SL–18PFJ
CK25	Ceramic capacitor	CC1–63V–06a–SL–18PFJ
CK24	Ceramic capacitor	CC1–63V–06a–SL–22PFJ
CK11	Ceramic capacitor	CC1–63V–08a–SL–180PFJ
CK09	Ceramic capacitor	CT1–63V–08a–2B4–4700PFK
CK04	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK06	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK07	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK08	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK10	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK12	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK14	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK15	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK17	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK18	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK19	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK21	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK31	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK37	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK43	Ceramic capacitor	CT1–63V–08a–2F4–10nFZ
CK22	Polyester film capacitor	CL21X–50V–0.47μFJ
CK28	Aluminum electrolytic capacitor	CD110X–50V–2.2μFM
CK05	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CK13	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CK16	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CK20	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CK40	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CK38	Aluminum electrolytic capacitor	CD110X–16V–100μFM
LK06	Fixed inductor	LGB0606–6.8μHJ
LK08	Fixed inductor	LGB0606–6.8μHJ
LK09	Fixed inductor	LGB0606–6.8μHJ
LK10	Fixed inductor	LGB0606–6.8μHJ
LK11	Fixed inductor	TLN3193–100uHK
LK02	Fixed inductor	LGB0606–15μHJ
LK03	Fixed inductor	LGB0606–27μHJ

PARTS LIST (continued)

Position	Parts	Type
LK04	Fixed inductor	LGB0606–27μHJ
LK07	Fixed inductor	LGB0606–27μHJ
LK01	Fixed inductor	LGB0606–39μHJ
VDK01	Diode	W05Z5.6A
VK01	Triode	3DG1815–Y
VK01	Triode	2SC1815–Y
VK01	Triode	2PC1815GR
VK04	Triode	3DG1815–Y
VK04	Triode	2SC1815–Y
VK04	Triode	2PC1815GR
VK05	Triode	3DG1815–Y
VK05	Triode	2SC1815–Y
VK05	Triode	2PC1815GR
VK06	Triode	3DG1815–Y
VK06	Triode	2SC1815–Y
VK06	Triode	2PC1815GR
VK10	Triode	3DG1815–Y
VK10	Triode	2SC1815–Y
VK10	Triode	2PC1815GR
NK02	IC	TC90A53N
NK03	IC	MM1031XS
		Auto jumper
WK01	Jumper	5mm
WK02	Jumper	5mm
WK05	Jumper	5mm
WK06	Jumper	5mm
JK01	Jumper	7.5mm
JK04	Jumper	7.5mm
WK03	Jumper	15mm
		Parts on VM PCB
RV038	Carbon film resistor	RT13–0.166W–20ΩJ
RV044	Carbon film resistor	RT13–0.166W–20ΩJ
RV025	Carbon film resistor	RT13–0.166W–47ΩJ
RV026	Carbon film resistor	RT13–0.166W–47ΩJ
RV014	Carbon film resistor	RT13–0.166W–68ΩJ
RV027	Carbon film resistor	RT13–0.166W–68ΩJ
RV012	Carbon film resistor	RT13–0.166W–100ΩJ
RV015	Carbon film resistor	RT13–0.166W–100ΩJ
RV033	Carbon film resistor	RT13–0.166W–100ΩJ
RV034	Carbon film resistor	RT13–0.166W–100ΩJ
RV023	Carbon film resistor	RT13–0.166W–180ΩJ
RV024	Carbon film resistor	RT13–0.166W–180ΩJ
RV007	Carbon film resistor	RT13–0.166W–470ΩJ

PARTS LIST (continued)

Position	Parts	Type
RV005	Carbon film resistor	RT13–0.166W–1KΩJ
RV006	Carbon film resistor	RT13–0.166W–1KΩJ
RV013	Carbon film resistor	RT13–0.166W–1KΩJ
RV037	Carbon film resistor	RT13–0.166W–1.2KΩJ
RV042	Carbon film resistor	RT13–0.166W–1.2KΩJ
RV020	Carbon film resistor	RT13–0.166W–1.5KΩJ
RV036	Carbon film resistor	RT13–0.166W–1.5KΩJ
RV043	Carbon film resistor	RT13–0.166W–1.5KΩJ
RV030	Carbon film resistor	RT13–0.166W–2.2KΩJ
RV032	Carbon film resistor	RT13–0.166W–2.2KΩJ
RV004	Carbon film resistor	RT13–0.166W–3.3KΩJ
RV016	Carbon film resistor	RT13–0.166W–3.3KΩJ
RV021	Carbon film resistor	RT13–0.166W–3.3KΩJ
RV017	Carbon film resistor	RT13–0.166W–4.7KΩJ
RV029	Carbon film resistor	RT13–0.166W–5.1KΩJ
RV002	Carbon film resistor	RT13–0.166W–9.1KΩJ
RV008	Carbon film resistor	RT13–0.166W–10KΩJ
RV009	Carbon film resistor	RT13–0.166W–10KΩJ
RV010	Carbon film resistor	RT13–0.166W–10KΩJ
RV028	Carbon film resistor	RT13–0.166W–10KΩJ
RV031	Carbon film resistor	RT13–0.166W–10KΩJ
RV040	Carbon film resistor	RT13–0.166W–12KΩJ
RV039	Carbon film resistor	RT13–0.166W–68KΩJ
RV041	Carbon film resistor	RT13–0.166W–68KΩJ
RV018	Carbon film resistor	RT13–0.166W–100KΩJ
RV019	Carbon film resistor	RT13–0.166W–100KΩJ
RV011	Carbon film resistor	RT13–0.166W–1MΩJ
RV045	Metal oxide film resistor	RY21–0.5W–2.7ΩJ
RV045	Metal oxide film resistor	MOS1/2W2R7J
RV046	Metal oxide film resistor	RY21–0.5W–2.7ΩJ
RV046	Metal oxide film resistor	MOS1/2W2R7J
RV043A	Metal oxide film resistor	RY21–0.5W–4.7ΩJ
RV043A	Metal oxide film resistor	MOS1/2W4R7J
RV049	Metal oxide film resistor	RY21–0.5W–4.7ΩJ
RV049	Metal oxide film resistor	MOS1/2W4R7J
RV001	Metal oxide film resistor	RY21–0.5W–100ΩJ
RV001	Metal oxide film resistor	MOS1/2W101J
RV047	Metal oxide film resistor	RY21–2W–220ΩJ
RV047	Metal oxide film resistor	MOS2W221J
RV022	Metal oxide film resistor	RY21–2W–470ΩJ
RV022	Metal oxide film resistor	MOS2W471J
CV007	Ceramic capacitor	CC1–63V–08a–SL–220PFJ
CV011	Ceramic capacitor	CC1–63V–08a–SL–220PFJ

PARTS LIST (continued)

Position	Parts	Type
CV008	Ceramic capacitor	CC1–63V–06a–SL–470PFJ
CV002	Ceramic capacitor	CC1–63V–08a–2B4–4700PFK
CV003	Ceramic capacitor	CC1–63V–08a–2B4–4700PFK
CV012	Ceramic capacitor	CC1–63V–08a–2B4–4700PFK
CV015	Ceramic capacitor	CC1–63V–08a–2B4–4700PFK
CV016	Ceramic capacitor	CC1–63V–08a–2B4–4700PFK
CV023	Ceramic capacitor	CC1–500V–06c–SL–56PFK
CV017	Ceramic capacitor	CT1–500V–14c–2B4–4700PFK
CV018	Ceramic capacitor	CT1–500V–14c–2B4–4700PFK
CV006	Polyester film capacitor	CL21X–50V–0.01μFJ
CV029	Polyester film capacitor	CL21X–50V–0.01μFJ
CV013	Polyester film capacitor	CL21X–50V–0.047μFJ
CV014	Polyester film capacitor	CL21X–50V–0.047μFJ
CV009	Polyester film capacitor	CL21X–50V–0.1μFJ
CV019	Polyester film capacitor	CL21X–250V–0.1μFJ
CV001	Aluminum electrolytic capacitor	CD110X–16V–10μFM
CV005	Aluminum electrolytic capacitor	CD110X–25V–47μFM
CV030	Aluminum electrolytic capacitor	CD110X–25V–47μFM
CV020	Aluminum electrolytic capacitor	CD110X–250V–10μFM
CV024	Aluminum electrolytic capacitor	CD110X–250V–10μFM
CV021	Aluminum electrolytic capacitor	CD110X–250V–47μFM
CV022	Aluminum electrolytic capacitor	CD110X–250V–47μFM
LV01	Feed–through inductor	TEM2011
LV02	Feed–through inductor	TEM2011
LV03	Feed–through inductor	TEM2011
LV05	Feed–through inductor	TEM2011
DM001	Diode	2CK75D
DM001	Diode	1N4148
DM002	Diode	2CK75D
DM002	Diode	1N4148
DM004	Diode	2CK75D
DM004	Diode	1N4148
DM005	Diode	2CK75D
DM005	Diode	1N4148
DM006	Diode	2CK75D
DM006	Diode	1N4148
DM003	Diode	W05Z12C
DM007	Diode	BYV26C
DM008	Diode	BYV26C
VQ004	Triode	3CG1015–Y
VQ004	Triode	2SA1015–Y
VQ004	Triode	2PA1015GR
VQ016	Triode	3CG1015–Y

PARTS LIST (continued)

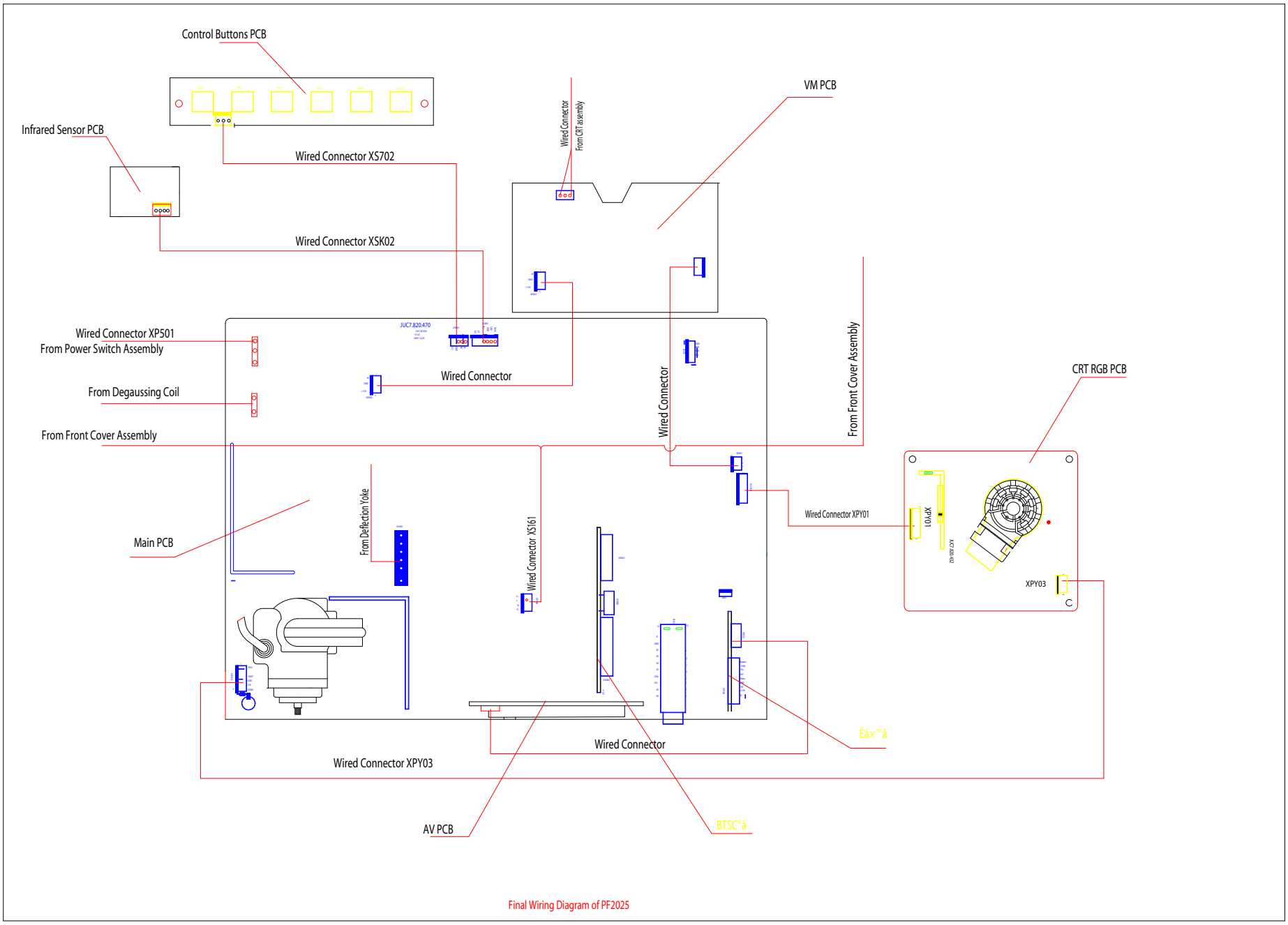
Position	Parts	Type
VQ016	Triode	2SA1015–Y
VQ016	Triode	2PA1015GR
VQ018	Triode	3CG1015–Y
VQ018	Triode	2SA1015–Y
VQ018	Triode	2PA1015GR
VQ001	Triode	3DG1815–Y
VQ001	Triode	2SC1815–Y
VQ001	Triode	2PC1815GR
VQ003	Triode	3DG1815–Y
VQ003	Triode	2SC1815–Y
VQ003	Triode	2PC1815GR
VQ006	Triode	3DG1815–Y
VQ006	Triode	2SC1815–Y
VQ006	Triode	2PC1815GR
VQ014	Triode	3DG1815–Y
VQ014	Triode	2SC1815–Y
VQ014	Triode	2PC1815GR
VQ015	Triode	3DG1815–Y
VQ015	Triode	2SC1815–Y
VQ015	Triode	2PC1815GR
VQ017	Triode	3DG1815–Y
VQ017	Triode	2SC1815–Y
VQ017	Triode	2PC1815GR
VQ007	Triode	BC547
VQ007	Triode	BC548C
VQ009	Triode	BC547
VQ009	Triode	BC548C
VQ010	Triode	BC547
VQ010	Triode	BC548C
VQ008	Triode	BC557
VQ011	Triode	BC557
VQ002	Triode	2SC2878–A
VQ005	Triode	2SC2878–A
VQ019	Triode	2SA1837
VQ019	Triode	2SB1569A,E
VQ020	Triode	2SC4793
VQ020	Triode	2SD2400A,E
		Manual jumper
WV10	Jumper	5mm
		Auto jumper
WV02	Jumper	5mm
WV03	Jumper	5mm
WV06	Jumper	5mm

PARTS LIST (continued)

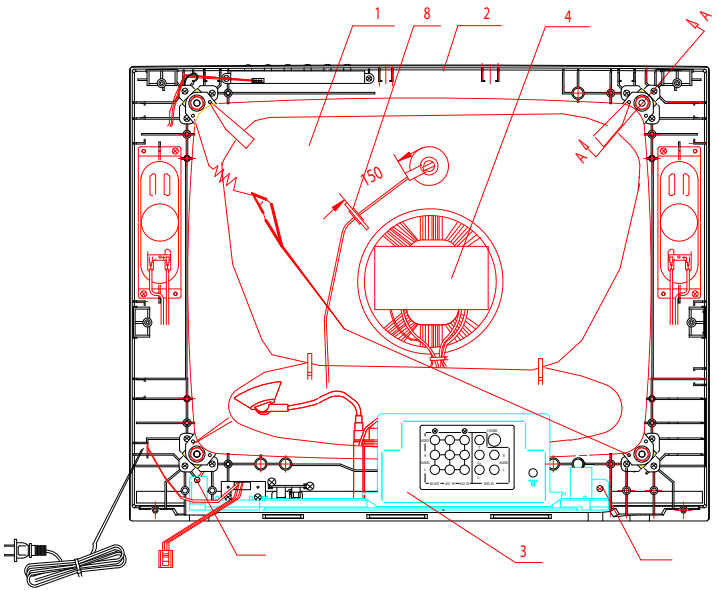
Position	Parts	Type
WV08	Jumper	5mm
WV09	Jumper	5mm
WV11	Jumper	5mm
WV01	Jumper	7.5mm
WV04	Jumper	7.5mm
WV05	Jumper	7.5mm
WV07	Jumper	7.5mm
		Other Parts
AY01	21″ CRT	A51QDX992X001
	Electric speaker	YDT513-A3-10W-8Ω

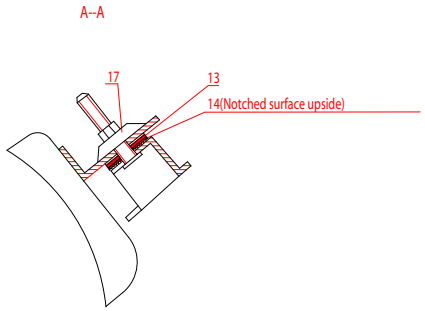
Notice:

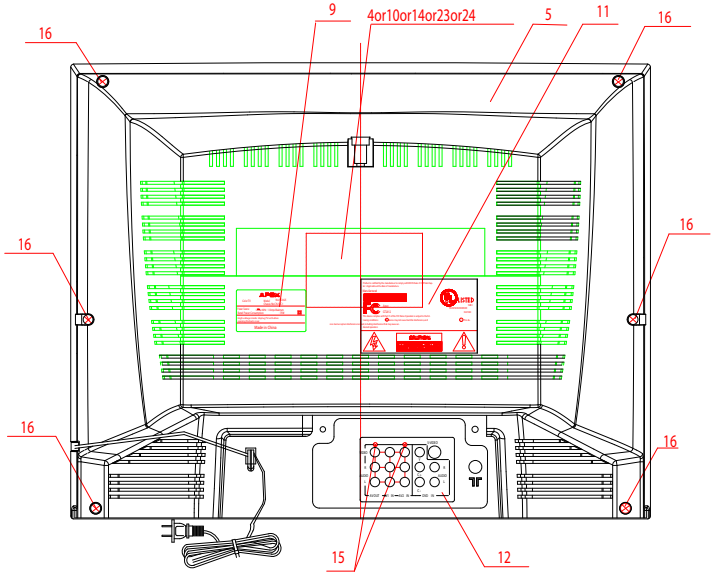
⚠FDA This symbol tells you that replacement components related to high voltage, beam current and X-ray radiation should not be made at will.



Final Wiring Diagram of PF2025



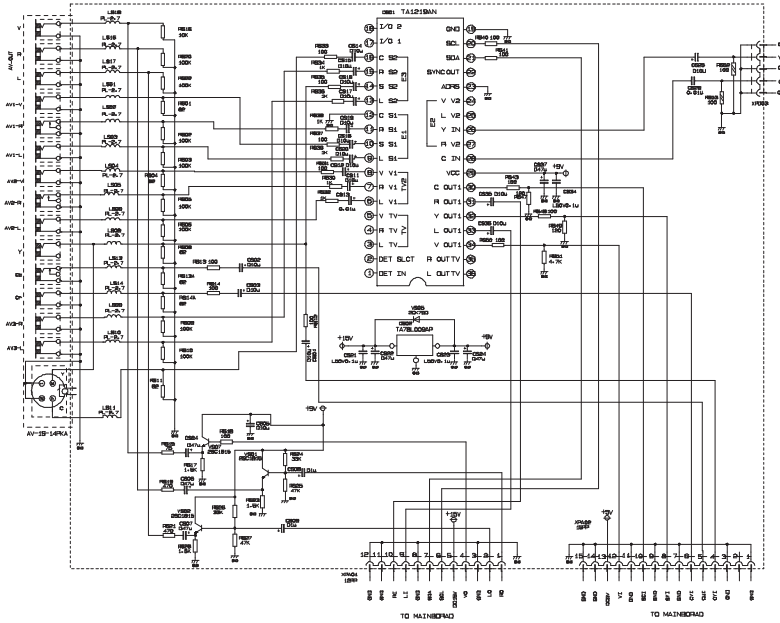




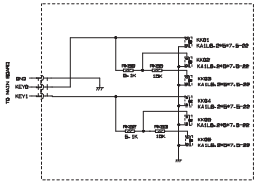
25	JU8.842.044	Sealing shock-absorption bar	2	Stuck on the joint on the back cover
24	JUC8.817.327-4	Warning lable	1	For LG CRT only
23	JUC8.817.327-3	Warning lable	1	For BMCC CRT only
22		Protection film 2124C(W=150mm)		
21		White nitro magnetic paint Q04-3		
20		Soldering agent		
19		Tin solder		
18				
17		Notched nut M5	4	
16		Tapping screw 4x20BAHO	6	
15		Tapping screw 3X12VwAHCh	2	
14	JUC8.817.327-2	Warning lable	1	For Daewoo CRT only
13	T/JU8.949.224	Washer	4	
12	JUC8.804.	AV plate	1	
11	JUC8.817.328	C-UL label		
10	JUC8.817.327	Warning label		For Shenzhen-Samsung CRT only
9	JUC8.817.326	Rear plate	1	
UL 8	T/JU8.676.003	Distance clip	1	
UL 7	T/JU8.667.328	Wire clip	1	
6			1	
UL 5	JUC8.074.158	Back cover	1	
4	JUC8.817.327-1	Warning label	1	For Toshiba CRT only
3	JUC6.672.648	Main PCB assembly	1	
2	JUC6.116.475	Front cover assembly	1	
1	JUC5.370.068	CRT assembly	1	
Serial No.	Code No.	Parts	Qty	Remarks

JUC2.025.279

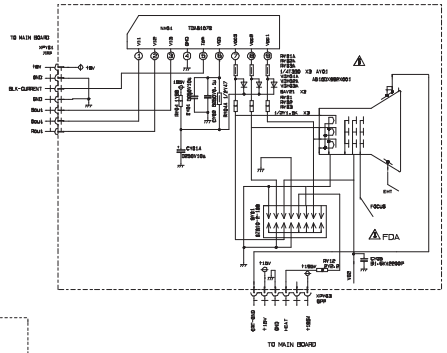
AV Board JUC7.820.485



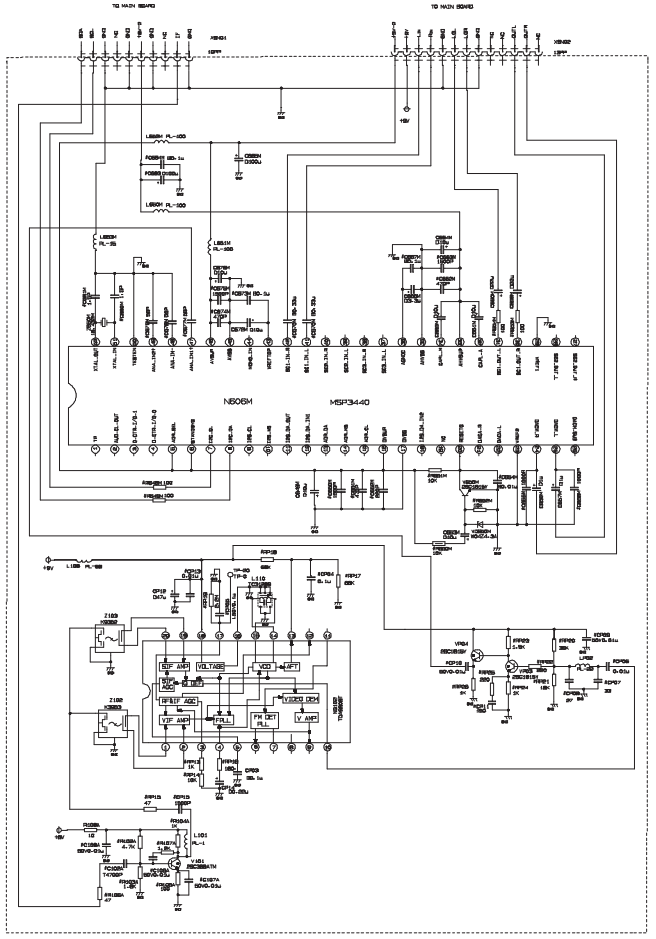
KEY BOARD JUC7.820.491



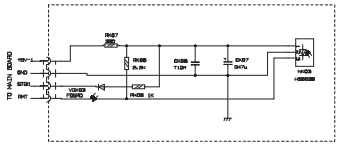
YB Board JUC7.820.490



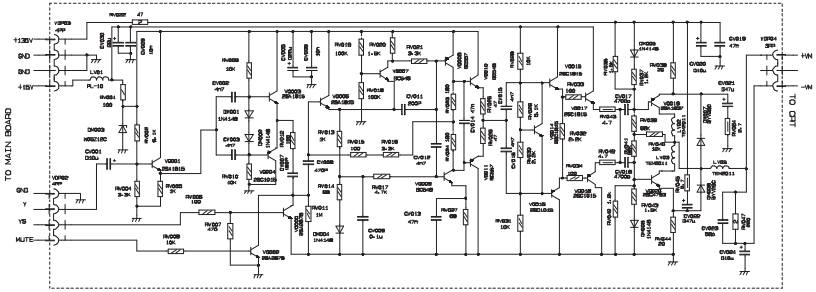
STEREO BOARD JUC7.820.402



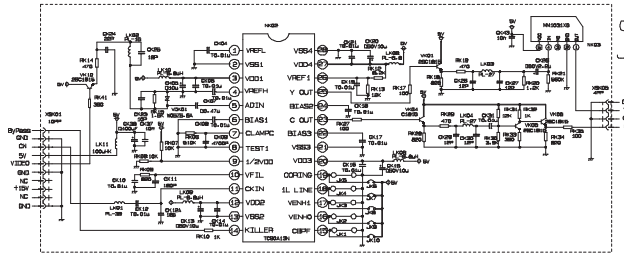
REMOTE RECEIVER BOARD JUC7.820.492



VM BOARD JUC7.820.472



COMB BOARD JUC7.820.471



This circuit diagram is only for reference.
Specifications are subject to change without notice.

1. Any components identified by ⚠ have special safety-related characteristics. Use replacement components which have the same characteristics as the original parts.
2. ⏚ Cold ground ⊥ Hot ground
3. ⚠ FDA This symbol tells you that replacement components related to high voltage, beam current and X-ray radiation should not be made at will.

DESIGNER		CIRCUIT DIAGRAM OF PF2025	JUC2.025.279
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MANAGER			This 1 page Total 2 page
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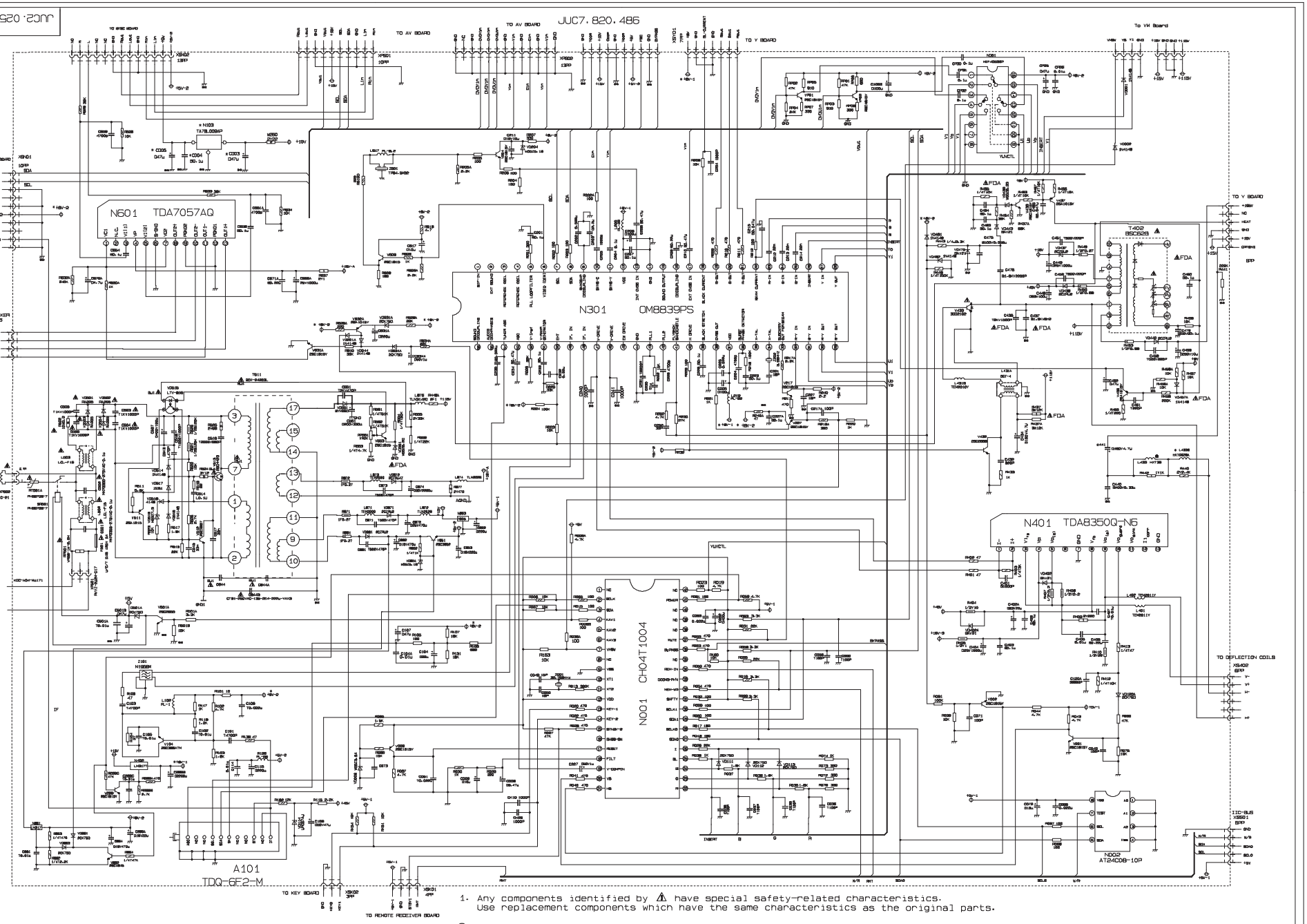

1. Any components identified by ⚠ have special safety-related characteristics. Use replacement components which have the same characteristics as the original parts.
2. ⏚ Cold ground ⊥ Hot ground
3. ⚠ FDA This symbol tells you that replacement components related to high voltage, beam current and X-ray radiation should not be made at will.

This circuit diagram is only for reference.
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DESIGNER		CIRCUIT DIAGRAM OF PF2025	JUC2.025.279
DATE			
MANAGER			
DATE			

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Group component lists of PF2025

Part name	CRT Type	Old Part number	New Part number	List Price
Remote control	TYPE:CHKT1A	CHKT1A	8201801120L	$15.00
CRT assembly	For Samsung CRT	A51QDX992X001	8537000680C01	$120.00
CRT assembly	For Toshiba CRT	A51LVV896X09	8537000680C02	$120.00
CRT assembly	For BMCC CRT	A51LXR195X91	8537000680C03	$120.00
Front cover assembly			8611604750C	$38.16
Speaker			56233310080	$8.00
Power Cord			53411011170	$4.00
Power switch assembly			8667200290C	$16.98
BTSC PCB assembly		JUC7.820.402	8667206370C	$25.24
Main PCB assembly	For Samsung CRT	JUC7.820.486-3	8667206480C01	$110.00
Main PCB assembly	For Toshiba CRT	JUC7.820.486-3	8667206480C02	$110.00
Main PCB assembly	For BMCC CRT	JUC7.820.486-3	8667206480C03	$110.00
Comb PCB assembly		JUC7.820.471-4	8667206990C	$18.66
AV PCB assembly		JUC7.820.485-4	8667207060C	$16.98
Velocity modulation PCB assembly		JUC7.820.472-4	8667207070C	$16.98
CRT RGB PCB assembly	For Samsung CRT	JUC7.820.490-3	8667207080C01	$16.98
CRT RGB PCB assembly	For Toshiba CRT	JUC7.820.490-3	8667207080C02	$16.98
CRT RGB PCB assembly	For BMCC CRT	JUC7.820.490-3	8667207080C03	$16.98
Control PCB assembly		JUC7.820.492-3	8667207090C	$16.98
Control PCB assembly		JUC7.820.492-3	8667207100C	$16.98
Back cover			8807402020C	$25.44

APEX DIGITAL TELEVISION In-Warranty Schedule by Model

Product Model No.	LIMITED WARRANTY [1]				Carry-In Service	In Home	Stock Repair	REIMBURSEMENT RATES				
								Carry-In		Home Service		Stock
	Parts	Remote Control	Labor	CRT [3]	Yes/No	Yes/No	Yes/No	Minor	Major	Minor	Major	Repair
13 inch [2]												
AT1302	90	90	90	90	N	N	N	N/A	N/A	N/A	N/A	N/A
AT1308	90	90	90	90	N	N	N	N/A	N/A	N/A	N/A	N/A
20 inch [2]												
AT2002 / AT2002S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
AT2008 / AT2008S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2011J	365	90	90		N	N	N	N/A	N/A	N/A	N/A	N/A
GT2011S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2015	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2015DV	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
KT2006	1 YEAR STORE REPLACEMENT											
24 inch [2&3]												
AT2402	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
AT2408 / AT2408S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2411S	365	90	90	365								
GT2415	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
PF2425	365	90	90	730	N	N	N	N/A	N/A	N/A	N/A	N/A
KT2406	365	90	90	365	Y	N	N	[4]	[4]	[4]	[4]	[4]
25 inch [2]												
AT2502	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
AT2502S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
27 inch [3]												
AT2702	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
AT2702S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
AT2708 / AT2708S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT2711S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT2715	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
PF2725	365	90	90	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT2715DV	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
32 inch [3]												
AT3208S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT3215	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
PF3225	365	90	90	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
KT3226	365	90	90	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
PROJECTION												
GB4308	365	90	365	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB43HD09	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB5108	365	90	365	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB51HD09	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB55HD09W	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB65HD09W	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]

[1] Limited Warranty is printed on the last page of the owner's manual

2 All defective units 13" - 25 "during the first 90 days of ownership will be exchanged at the original place of purchase. Dealer may contact APEX to receive a Return Authorization from Apex for credit or exchange.

3 Should the picture tube fail during the In-Warranty period the product will be exchanged. The customer is responsible for the Service Center diagnostic fee after the initial labor warranty period and for all packing, transportation and insurance charges.

4 See Master Dealer File for Rates for each Dealer

Location	Part Number	Type	Description
PF2025	CHCAB00034		Chassis frame
PF2025	CHCAB00035		Back cover
PF2025	CHCAB00036		Front cover assembLy
PF2025	CHCAB00037		Six-button
PF2025	CHCBA00036	Main board	Main board
PF2025	CHCBA00037	CRT Board, Y Board	CRT Board, Y Board
PF2025	CHCBA00038	AV BOARD	AV BOARD
PF2025	CHCBA00039	K BOARD	K BOARD
PF2025	CHCBA00040	Remote board	Remote board
VE901	CHCRT00007	A51QDX992X001	21” CRT
NY01	CHICS00063	TDA6107Q	IC
PF2025	CHSPK00011	YDT513-A3-10W-8ohm	Electric speaker
A101	CHTNR00002	TDQ-6F2-M	Electronic tuner
T402	CHTRF00029	BSC62B	FBT
V432	CHTRS00009	2SC2688-L	Triode
V512	CHTRS00011	2SC3807	Triode
V513	CHTRS00014	2SC4423-M	Triode
PF2025-3225	CHCBA00043	D-Com Board	Digital Com Filter Board
PF2025-3225	CHCBA00046	VM Board	VM Board
PF2025-3225	CHCBA00049	BTSC Board	BTSC Stereo Board
PF2425	CHCAB00038		Chassis frame
PF2425	CHCAB00039		Back cover
PF2425	CHCAB00040		Front cover assembLy
PF2425	CHCBA00041	Main board	Main board
PF2425-3225	CHCBA00035	Power board	Power board
PF2425-3225	CHCBA00042	CRT Board	CRT Board, Y Board
PF2425-3225	CHCBA00044	AV BOARD	AV BOARD
PF2425-3225	CHCBA00045	AV Board Side	AV Board Side
PF2425-3225	CHCBA00047	K BOARD	K BOARD
PF2425-3225	CHCBA00048	Remote board	Remote board
SY01	CHCNT00019	GZS10-2-108A	GZS CRT socket
SY01	CHCNT00020	GZS10-2-AC3	GZS CRT socket
SY01	CHCNT00022	GZS10-301-2	GZS CRT socket
SY01	CHCNT00023	GZS10-301-G2	GZS CRT socket
XS01	CHCNT00030	AV-3S-9PB	AY terminals
XS02	CHCNT00031	AV-2-6PA	AY terminals
XS01	CHCNT00032	AV-1-3PNC	AV terminals
XS01	CHCNT00033	AVL-13-3RA	AV terminals
AY01	CHCRT00011	A59QDC259X542.	25” CRT
AY01	CHCRT00012	A59QDF891X002	25” CRT
AY01	CHCRT00012	A59QDF891X002	25” CRT
AY01	CHCRT00016	A68QCP891X001	31 " CRT
AY01	CHCRT00019	A68QDL080X013	32 " CRT
AY01	CHCRT00020	A80LTM350X10	34” CRT
AY01	CHCRT00021	A80QEA891X001	34” CRT
AY01	CHCRT00031	A68QCL259X550	29 " CRT
AY01	CHCRT00031	A68QCL259X550	30 " CRT
Z650M	CHCRY00002	JA18A1-18.432MHz	Crystal oscillator
Z202	CHCRY00004	JA18A1-3.579545MHz	Crystal oscillator
PF2425-3225	CHCRY00004	JA18A1-3.579545MHz	Crystal oscillator
Z001	CHCRY00008	JA18D-32.768KHz	Crystal oscillator
PF2425-3225	CHCRY00008	JA18D-32.768KHz	Crystal oscillator
VD821	CHDIO00012	AK03	Diode

Location	Part Number	Type	Description
VD821	CHDIO00012	AK03	Diode
VD824	CHDIO00013	AU01Z	Diode
VD82SA	CHDIO00013	AU01Z	Diode
VD828	CHDIO00013	AU01Z	Diode
VD824	CHDIO00013	AU01Z	Diode
VD825A	CHDIO00013	AU01Z	Diode
VD828	CHDIO00013	AU01Z	Diode
VD402	CHDIO00014	BAV21	Diode
VD443	CHDIO00014	BAV21	Diode
VD475	CHDIO00014	BAV21	Diode
VD402A	CHDIO00014	BAV21	Diode
VDY01A	CHDIO00014	BAV21	Diode
VDY02A	CHDIO00014	BAV21	Diode
VDY03A	CHDIO00014	BAV21	Diode
VD402	CHDIO00014	BAV21	Diode
VD443	CHDIO00014	BAV21	Diode
VD475	CHDIO00014	BAV21	Diode
VD402A	CHDIO00014	BAV21	Diode
VD433	CHDIO00017	BY359F-1500	Diode
VD433	CHDIO00017	BY359F-1500	Diode
VD801	CHDIO00018	BY56	Diode
VD802	CHDIO00018	BY56	Diode
VD803	CHDIO00018	BY56	Diode
VD804	CHDIO00018	BY56	Diode
DM007	CHDIO00020	BYV26C	Diode
DM008	CHDIO00020	BYV26C	Diode
VD434	CHDIO00022	BYW96D	Diode
PF2425-3225	CHDIO00022	BYW96D	Diode
VD434	CHDIO00023	BYW96E	Diode
PF2425-3225	CHDIO00023	BYW96E	Diode
VD401A	CHDIO00024	BZD23-C33	Diode
VD401A	CHDIO00024	BZT03-C33	Diode
VD401A	CHDIO00024	BZD23-C33	Diode
VD401A	CHDIO00024	BZT03-C33	Diode
VD829	CHDIO00037	MTZJ24C	Diode
VD829	CHDIO00037	MTZJ24C	Diode
VD835	CHDIO00052	RU4AM(LF-LI)	Diode
VD835	CHDIO00052	RU4AM(LF-LI)	Diode
VD822	CHDIO00053	SARS01	Diode
VD822	CHDIO00053	SARS01	Diode
VD826	CHDIO00063	W05Z18C	Diode
VD827	CHDIO00063	W05Z18C	Diode
VD826	CHDIO00063	W05Z18C	Diode
VD827	CHDIO00063	W05Z18C	Diode
VD829	CHDIO00064	W05Z24C	Diode
VD008	CHDIO00065	W05Z3.6A	Diode
PF2425-3225	CHDIO00065	W05Z3.6A	Diode
VD6S0M	CHDIO00068	W05Z4.3A	Diode
VDY30	CHDIO00069	W05Z5.1B	Diode
VD836	CHDIO00074	W05Z6.8B	Diode
VD439	CHDIO00076	W05Z8.2B	Diode
PF2425-3225	CHDIO00076	W05Z8.2B	Diode
VD801	CHDIO00078	Z5A6	Diode

Location	Part Number	Type	Description
VD802	CHDIO00078	Z5A6	Diode
VD803	CHDIO00078	Z5A6	Diode
VD804	CHDIO00078	Z5A6	Diode
VD801	CHDIO00078	Z5A6	Diode
VD802	CHDIO00078	Z5A6	Diode
VD803	CHDIO00078	Z5A6	Diode
VD804	CHDIO00078	Z5A6	Diode
VD801	CHDIO00078	Z5A6	Diode
VD802	CHDIO00078	Z5A6	Diode
VD803	CHDIO00078	Z5A6	Diode
VD804	CHDIO00078	Z5A6	Diode
VDK01	CHDIO00080	W05Z5.6A	Diode
VDK01	CHDIO00080	W05Z5.6A	Diode
DM003	CHDIO00081	W05Z12C	Diode
T801	CHFTR00001	LCL-F11 (JU4.757.030)	Line filter
T801	CHFTR00001	LCL-F11(JU4.757.060)	Line filter
T802	CHFTR00003	TRF3196	Line filter
T802	CHFTR00003	TRF3196	Line filter
Z101	CHFTR00009	M1958M	Surface acoustic wave filter
PF2425-3225	CHFTR00009	M1958M	Surface acoustic wave filter
Z102	CHFTR00010	M3953M	Surface acoustic wave filter
Z103	CHFTR00011	M9352M	Surface acoustic wave filter
Z601	CHFTR00014	TPSRA4M50B00-B0	Ceramic trap
PF2425-3225	CHFTR00014	TPSRA4M50B00-B0	Ceramic trap
Z601	CHFTR00017	XT4.5MB	Ceramic trap
PF2425-3225	CHFTR00017	XT4.5MB	Ceramic trap
ZP831	CHFUS00001	PRF5000F008	Direct—weld fuse
ZP832	CHFUS00001	PRF5000F008	Direct—weld fuse
ZP833	CHFUS00001	PRF5000F008	Direct—weld fuse
PF2425-3225	CHFUS00001	PRF5000F008	Direct—weld fuse
PF2425-3225	CHFUS00001	PRF5000F008	Direct—weld fuse
PF2425-3225	CHFUS00001	PRF5000F008	Direct—weld fuse
N002	CHICS00004	AT24C08-10PI	IC
PF2425-3225	CHICS00004	AT24C08-10PI	IC
N001	CHICS00009	CH04T1004	IC
PF2425-3225	CHICS00009	CH04T1004	IC
PF2425-3225	CHICS00016	CW574CS	IC
NP02	CHICS00019	HEF4053BP	IC
PF2425-3225	CHICS00019	HEF4053BP	IC
PF2425-3225	CHICS00019	MC14053BCP	IC
NK07	CHICS00021	HS0038	IC
NK07	CHICS00021	HS0038	IC
NK07	CHICS00021	HS0038	IC
NK03	CHICS00021	HS0038	IC
NK07	CHICS00022	HS0038A	IC
NK07	CHICS00022	HS0038A	IC
NK07	CHICS00022	HS0038A	IC
NK03	CHICS00022	HS0038A	IC
NK07	CHICS00023	HS0038A2	IC
NK07	CHICS00023	HS0038A2	IC
NK07	CHICS00023	HS0038A2	IC
NK03	CHICS00023	HS0038A2	IC
VD114	CHICS00026	KA33V	IC

Location	Part Number	Type	Description
PF2425-3225	CHICS00026	KA33V	IC
N862	CHICS00027	L7805CV	IC
PF2425-3225	CHICS00027	L7805CV	IC
PF2425-3225	CHICS00027	MC7805CT	IC
N851	CHICS00030	L78L05ACZ	IC
PF2425-3225	CHICS00030	L78L0SACZ	IC
N851	CHICS00030	L78L05ACZ	IC
N402	CHICS00037	LM317T	IC
N852	CHICS00037	LM317T	IC
	CHICS00037	LM317T	IC
	CHICS00037	LM317T	IC
NQ838	CHICS00038	LTV-816A	IC
	CHICS00038	LTV-816A	IC
N606M	CHICS00045	MSP3440G-B8	IC
N301	CHICS00048	OM8839PS	IC
	CHICS00048	OM8839PS	IC
	CHICS00048	p~A78L05ACLP	IC
NQ833	CHICS00052	SE135N	IC
NQ833	CHICS00052	SE135N	IC
NQ833	CHICS00053	SE140N	IC
NQ821	CHICS00057	STR-F6626	IC
NQ821	CHICS00057	STR-F6626	IC
DS01	CHICS00059	TA1219AN	IC
N103	CHICS00060	TA78L009AP	IC
DS02	CHICS00060	TA78L009AP	IC
PF2425-3225	CHICS00060	TA78L009AP	IC
NY01	CHICS00064	TDA6108JF	IC
N601	CHICS00066	TDA7057AQ	IC
PF2425-3225	CHICS00066	TDA7057AQ	IC
N401	CHICS00067	TDA8350Q-N6	IC
PF2425-3225	CHICS00067	TDA8350Q-N6	IC
N301	CHICS00070	TDA8843-N2	IC
PF2425-3225	CHICS00070	TDA8843-N2	IC
NQ102	CHICS00074	TDA9808/V4	IC
NQ102	CHICS00074	TDA9808/V3	IC
N851	CHICS00076	uA78L05ACLP	IC
N851	CHICS00076	uA78L05ACLP	IC
VD114	CHICS00079	uPC574J	IC
PF2425-3225	CHICS00079	uPC574J	IC
NK03	CHICS00084	MM1031XS	IC
NK03	CHICS00084	MM1031XS	IC
NK02	CHICS00085	TC90A53N	IC
NK02	CHICS00085	TC90A53N	IC
XP910A	CHIND00003	XC-25	Degaussing coil
L433	CHIND00010	HXT20D(JU4.756.033)	Horizontal linear coil
L433	CHIND00011	HXT25(JU4.756.038)	Horizontal linear coil
L433	CHIND00011	HXT25(JU4.756.038)	Horizontal li:near coil
L433	CHIND00012	HXT30(JU4.756.022)	Horizontal linear coil
L433	CHIND00012	HXT30(JU4.756.022)	Horizontal linear ~oil
L433	CHIND00012	HXT30(JU4.756.022)Add the fo1l	Horizontal linear coil
L433	CHIND00012	HXT30(JU4.756.022)	Horizontal linear coil
T434	CHIND00043	LGT-1.5mH-K	Fixed inductor
L433A	CHIND00044	LGT-100uH-K	Horizontal amplitude inductor

Location	Part Number	Type	Description
L433A	CHIND00046	LGT-150uH-K	Horizontal amplitude inductor
L433A	CHIND00048	LGT-50uH(JUB4.757.007)	Horizontal amplitude inductor
XP910A	CHIND00065	XC-29	Degaussing coil
XP910A	CHIND00065	XC-29	Degaussing coil
XP910A	CHIND00066	XC-34	Degaussing coil
L433A	CHIND00069	WT-150uH-K	Horizontal amplitude inductor
VDK03	CHLED00001	FG5RD	Diode
VDK03	CHLED00001	FG5RD	Diode
PF2425-3225	CHRES00367	R140-0.5W-1.5KohmK	Glass glazed resistor
BC601	CHSPK00002	YDT516-A1-10W-8ohm	Electric speaker
BC602	CHSPK00002	YDT516-A1-10W-8ohm	Electric speaker
PF2425-3225	CHSPK00002	YDT516-A1-10W-8ohm	Electric speaker
PF2425-3225	CHSPK00002	YDT516-A1-10W-8ohm	Electric speaker
BC603	CHSPK00006	YDT813-C6-10W-8ohm	Electric speaker
BC604	CHSPK00006	YDT813-C6-10W-8ohm	Electric speaker
BC601	CHSPK00010	YDG41-A1-10W-8ohm	Electric speaker
BC602	CHSPK00010	YDG41-A1-10W-8ohm	Electric speaker
KK01	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK02	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK03	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK04	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK05	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK06	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK01	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK02	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK03	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK04	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK05	CHSWT00002	KA1L6x5x7.5-22	Feather touch switch
KK06	CHSWT00002	KA1L6x5x75-22	Feather touch switch
S801	CHSWT00006	KDC-A04-MU171	Power switch
S801	CHSWT00006	KDC-A04-MU171	Power switch
A101	CHTNR00002	TDQ-6F2-M	Electronic tuner
PF2425-3225	CHTNR00002	TDQ-6F2-M	Electronic tuner
T431	CHTRF00007	BCT-8(JUB4.739.003)	Line drive transformer
T431	CHTRF00007	BCT-8(JUB4.739.003)	Line drive transformer
T862	CHTRF00013	BCK-24907L(JUB4.726.102)	Switch transformer
T862	CHTRF00013	BCK-24907L(JUB4.726.102)	Switch transformer
T862	CHTRF00014	BCK-24908L(JUB4.726.103)	Switch transformer
T402	CHTRF00021	BSC68E	FBT
T402	CHTRF00022	BSC70C(JU4.799.024-6)	FBT
T402	CHTRF00022	BSC70C(JU4.799.024-6)	FBT
T402	CHTRF00025	BSC73H	FBT
T402	CHTRF00026	BSC73J	FBT
VY02	CHTRS00006	2SC2482	Triode
VQ821	CHTRS00008	2SC2655-Y	Triode
VQ821	CHTRS00008	2SC2655-Y	Triode
VQ002	CHTRS00010	2SC2878-A	Triode
vpoos	CHTRS00010	2SC2878-A	Triode
VQ002	CHTRS00010	2SC2878-A	Triode
VQ005	CHTRS00010	2SC2878-A	Triode
V104	CHTRS00013	2SC388ATM	Triode
	CHTRS00013	2SC388ATM	Triode
V101	CHTRS00013	2SC388ATM	Triode

Location	Part Number	Type	Description
VQ020	CHTRS00018	2SC4793	Triode
VQ020	CHTRS00018	2SC4793	Triode
YQ007	CHTRS00033	BC547	Triode
VQ009	CHTRS00033	BC547	Triode
VQ010	CHTRS00033	BC547	Triode
VQ020	CHTRS00033	2SD2400A.E	Triode
VQ007	CHTRS00033	BC547	Triode
VQ009	CHTRS00033	BC547	Triode
VQ010	CHTRS00033	BC547	Triode
VQ020	CHTRS00033	2SD2400A,E	Triode
V0008	CHTRS00034	BC557	Triode
VQ0I1	CHTRS00034	BC557	Triode
VQ008	CHTRS00034	BC557	Triode
VQ011	CHTRS00034	BC557	Triode
VY01	CHTRS00036	BF422	Triode
V432	CHTRS00037	BSN274	Field effect transistor
PF2425-3225	CHTRS00037	BSN274	Field effect transistor
V432	CHTRS00038	BSN304	Field effect transistor
PF2425-3225	CHTRS00038	BSN304	Field effect transistor
V433	CHTRS00040	BU2720DX	Triode
PF2425-3225	CHTRS00040	BU2720DX	Triode
PF2425-3225	CHTRS00043	KSC388C-Y	Triode
V101	CHTRS00043	KSC388C-Y	Triode
V862	CHTRS00045	RN1204	Triode
VQ822	CHTRS00045	RN1204	Triode
VS08	CHTRS00045	RN1204	Triode
VS09	CHTRS00045	RN1204	Triode
V862	CHTRS00045	RN1204	Triode
VQ822	CHTRS00045	RN1204	Triode
PF2425-3225	CHWIR00012	RVVZ-CH2-ZA720-ZH1	Power cord
XS801	CHWIR00012	RVVZ-CH2-ZA720-ZH1	Power cord
XS801	CHWIR00013	RWZ-CH2--W240-ZH1	Power cord
PF2725	CHCAB00041		Six-button
PF2725	CHCAB00042		Bear plate
PF2725	CHCAB00043		Back cover
PF2725	CHCAB00044		Front cover
PF2725	CHCAB00045		Chassis assembly
PF2725	CHCBA00050	Main board	Main board
PF3225	CHCAB00046	JUC8.604.023	Right speaker holder
PF3225	CHCAB00047	JUC8.604.022	Left speaker holder
PF3225	CHCAB00048	JUC8.070.026	Base plate
PF3225	CHCAB00049	JUC6.356.011	Six-button assembly
PF3225	CHCAB00050	JUC6.116.511	Back cover assembly
PF3225	CHCAB00051	JUC6.116.506	Front cover assembly
PF3225	CHCAB00052	JUC5.049.170	Chassis assembly
PF3225	CHCAB00053	JU6.152.259	CRT Support
PF3225	CHCBA00051	Main board	Main board
	CHMSC00004	WARNING LABEL	WARNING LABEL
	CHMSC00005	SCREWS	SCREWS